

Sci-Fi & Fantasy

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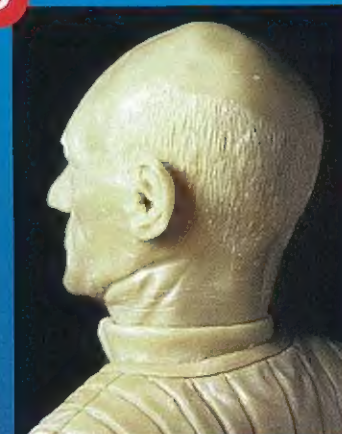
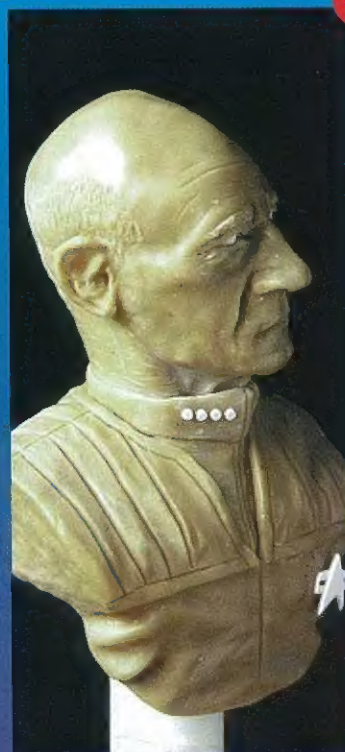
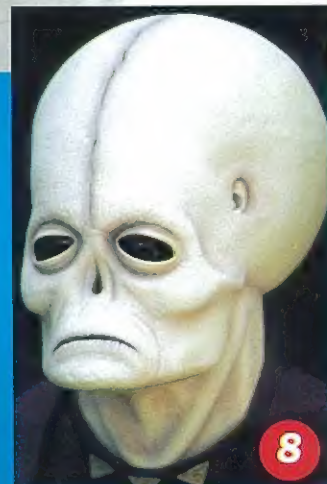
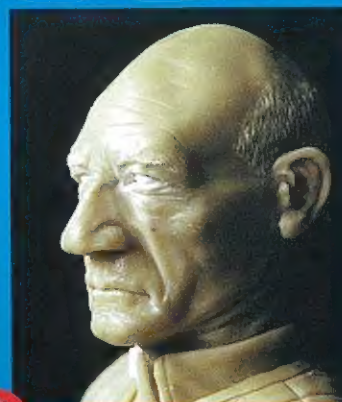
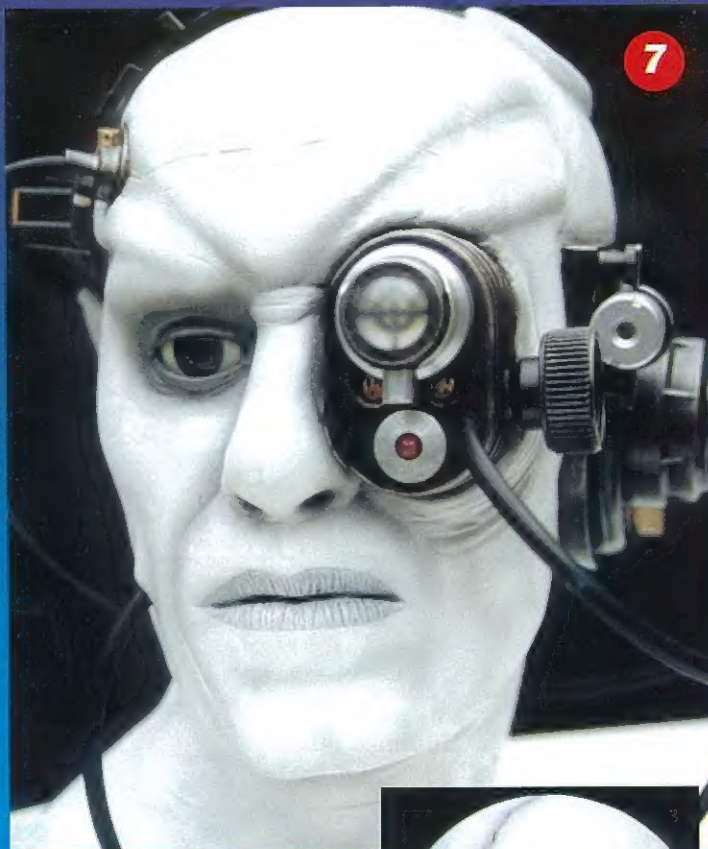


Carlos Henrique Da Silva Zangrando of Rio De Janeiro is the prolific modelmaker behind these images. Carlos' Undead Warrior (1 & 2) is almost a complete scratchbuild, the only kit part being a 1/5 scale Skilcraft skeleton. Also featured here by Carlos are the Ymir (4), a Geometrics kit; an Horizon Creature from the Black Lagoon (3); Tsukuda ABC Warrior (6) with light up eyes and a diorama inspired by St. George and the Dragon of Mont Blanc (5). The dragon is a heavily converted Tsukuda Jurassic Park Dilophosaurus whilst the knight and sacrificial girls are 1/32 scale metal figures.





Steve Sanderson of Luton, Beds, UK, recently completed this excellent first character study sculpture of *Jean-Luc Picard* (9). The quarter scale bust was created in around thirty hours over a week from *Super Sculpy*, "mixed with *Fimo*," says Steve, "to get rid of the translucent quality *Super Sculpy* has." The communicator badge was made from *plasticard* and the rank studs from *Milliput*, as were the eyeballs.



David Bills of Bilston, W. Midlands, UK, created his spooky alien head (8) by making a plaster former. A balloon was used to achieve the basic shape, then ping pong balls were added and the whole thing was covered with *Das Pronto* modelling clay to form the skin. David's *Borg* head (7) was made in the same way and features a washer for the eye plus bits of plastic and an old guitar lead as the implants.

Scratchbuilder/Sculptor?/

Converted a standard kit/CGI modeller?

Showcase your science fiction or fantasy modelling or sculpting talents to a worldwide audience by sending shots (photographs should ideally be in sharp focus and taken against a plain, uncluttered background) or colour, high resolution Jpegs, together with a brief explanation of how you accomplished your projects, to *Hangar 57*, 57 Lynwood Avenue, Clayton-le-Moors, Near Accrington, Lancashire, BB5 5RR, U.K. (We're sorry, but *SF&F* cannot return *Hangar 57* photographs).

Sci-Fi & Fantasy

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From the editorial desk

A thousand years between issues

As we work on the next issue of this magazine—just five short weeks away from publication—it's strange to think that issues 40 and 41 will be separated by a *thousand years*—and without us missing a single deadline.

When I was a teenager the year 2000 seemed a long, long ways away. By that date, according to the popular press of the time, we would all be wearing silver suits and piloting gleaming, flying cars through pollution-free, weather-controlled skies. Much of the solar system would have been explored by manned missions, we would have a permanent base on Mars and mankind would be limbering up for the giant leap to a 'nearby' star...

The reality of the year 2000 has proved a little less fanciful than the speculation of the sixties and seventies. No flying cars. No silver suits (except on the elbows through excessive wear). No pollution-free skies (though they are somewhat clearer than the smoggy evenings of my college years). No base on Mars. No manned mission to Proxima Centuri.

Fortunately, however, one area of 'prophecy' has never let us down and has always kept pace with our vision of what the next thousand years *should* be like. In the field of special effects flying cars are already here (and have been for some time); dinosaurs really do walk the earth again; men (and women) have already populated the universe and the aliens we welcome into our homes most evenings courtesy of the box in the corner are far more exotic and lifelike than those depicted in pulp magazines over the past three decades.

For followers and creators of visual science fiction, in whatever millennium, the future is already here in spirit—and it works beautifully. So here's to Supermarionation,

Slit-Scan; Stop-Motion; Go-Motion; Motion Control; Dynamation; Bluescreen; Greenscreen; Widescreen; Animatronics; Miniature-making; Creature Making; Prosthetics; Matte painting (traditional and digital); CGI; VHS; DVD... and to all the men and women and evolving media formats that, over the latter half of the closing century of the last thousand years, have initiated the great escape to those silver screen worlds we love to visit and, in some cases, would like to live in.

Here's to the next thousand years of FX magic too (considering current technology's headlong rush, who knows what absolute *wonders* they will bring)—and here's to you, dear readers. Here's to your dreams. Your imaginations. Your creative muscles (remember to keep them tightly flexed at all times, now). Here's to those model-making projects that allow you precious time out from an imperfect world. Here's to the skills you've acquired. Here's to the ones you've yet to develop. Here's to the creativity you're expressing, no matter what you may think of your efforts. For in being creative, you're being constructive... and, at the dawn of a new era, we'd all like to live in a world where construction is finally and unequivocally valued above destruction.

Here's to a happy next millennium.

...from Next Millennium.

Mike Reccia

Michael G. Reccia

David Openshaw

David Openshaw

See you in *five*, (remember, we're now *ten* issues per year) with a whole new issue.

Sci-Fi & Fantasy

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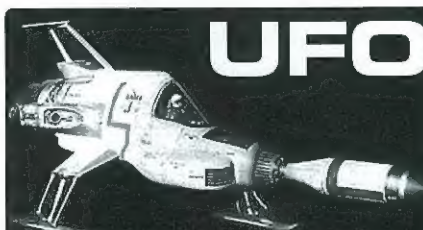
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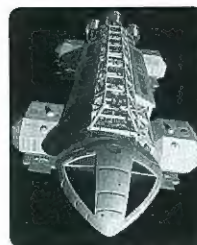


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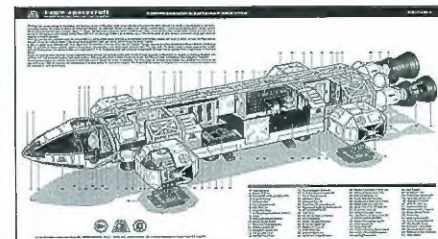
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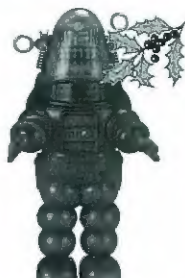
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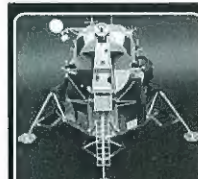
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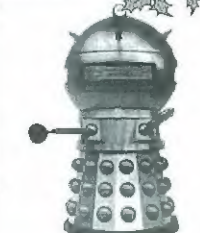
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STATE of the ART

Your guide to what's new and happening in SF&F modelling and FX

In the pipe. Five by five.

For those of you who don't recognise the quote, it's a line from James Cameron's *Aliens*, spoken by *Corporal Ferro*, the dropship pilot, as she and the rest of the Marines embark on a ride of a lifetime. It's also a line that must have been written in excess of two hundred times by actress Colette Hiller as she performed her celebrity guest role, signing autographs during the recent *Aliens* Convention at Shepperton.

'Fly the friendly skies' was another—and 'friendly' it was too. I have never attended a convention where the special guests mingled with the stand holders and public so willingly. I've also never been approached so many times by an *Alien* warrior—but that was mainly due to the fact that I was the only one there capable of mending his rapidly disintegrating costume! Well, he did have half a dozen *Colonial Marines* to contend with.

And who should drop in to the SF&F stall for an impromptu photo call? None other than long-time contributors Bill Pearson and Steve Begg who gave an entertaining Q & A session later in the day.

I'd like to thank everyone who visited our stand and conveyed their appreciation of the magazine. It was nice to hear the compliments.



Above: Bruce Hansing with his *Alien* heads and Colette Hiller (*Ferro*) at the SF&F stand.



Alien Wars reopens in Glasgow

Seven years ago at the *Arches* in Glasgow the original *Alien Wars* event claimed over 10,000 victims. In London, over 1,000,000 people visited the experience. Last year at the SECC 1700 more 'victims' were claimed. *Alien War Zone* is open December 23–January 16, 2000 with new costumes, sets and scares (event will also open in Blackpool, April 2000). Tickets £3.95 from Gary Gillies. Ring 0141 571 5372 for further information.

Artem make top ten

Artem Visual Effects, one of Europe's leading physical effects companies, has made the top ten of companies in the country for Innovation in the Government's Investors in People award. *Artem* were presented with the award this year and their efforts in achieving it did not go unnoticed. Their methodology in implementing the various aspects of practice required for Investors In People earned them entry into a special contest for those companies showing particular innovation in doing so. *Artem's* major innovation was the introduction of a 'Training Passport' tailored to an individual's training requirements and achievements. The portability, standards and convenience of the document merited the special attention of the judging panel. The effects industry has little in the way of structured training and *Artem* felt that in applying for the award they could start the ball rolling to create industry benchmarks. The net benefit of this, they believe, will be to increase the competence of individuals and ultimately the safety and standards of the industry. *Artem* have had discussions with various industry bodies in order to establish the



Mike Kelt, CEO of *Artem Visual Effects*, with the *Investors in People* award.

idea of the Training Passport as being the standard record of skill levels and training history. The company has experienced rapid growth over the past three years, at one point this year employing over 100 individuals. The need to keep track of training requirements becomes particularly evident when operating at these levels. *Artem's* worldwide workload this year has included models, animatronics, props, atmospherics, pyrotechnics, rigs, prosthetics and sculpture work for feature films, commercials, TV, theme parks and major exhibitions including the Millennium Dome. More information: <http://www.artem.com>

Hollywood comes to Glasgow

The SECC Glasgow, Dec 23rd.–Jan 16 offers an exhibition of props and costumes from some of Hollywood's biggest movies, including the 35ft *Batmobile*; 007 *Aston Martin* and props from *The World Is Not Enough*; costumes/props from *Star Wars Episode 1*; *Titanic*; *Indiana Jones*; *Dr. Who*; *Alien*; *Batman*; *Starship Troopers*; *Sleepy Hollow* and more. Tickets £2.95 children; £3.95 adults. For more information contact Gary Gillies on: 1041 571 5372.



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Kit and collectable schedule 2000

Compiled by Tony James of Comet Miniatures

New from 2

At the time of going to press *Studio 2's* 1/48 scale *Firefox* has just been issued at £69.50 plus £5.00 p&p (UK). Full review in an upcoming issue.

ENA

ENA's 22" long *UFO Moonbase Interceptor* is now available, priced £249.50 plus £8.00 p&p (UK). An extensive, multi-part review will appear in future issues of this magazine.

Shock News

AMT/Ertl have discontinued their *Man In Space* and *Space:1999 Eagle* kits.

Ertl genre releases

AMT/Ertl's spartan SF release schedule for the year 2000 is limited to just two new **Phantom Menace** subjects—the *Gungan submarine* (£15.00 plus p&p) and decorated 3-piece *Battle Droid set* (£20.00 plus p&p) plus display (ie: assembled and painted) versions of the *STAP with Battle Droid* and *Trade Federation Tank* (£20.00 each plus p&p) and a *lighted Death Star* at £30.00 plus p&p. **Star Wars** reissues comprise the *snappit gift set* (£20.00 plus p&p); *Snowspeeder* (£17.00 plus p&p); *Darth Vader's TIE fighter* (£16.00 plus p&p); *Millennium Falcon* (£24.00 plus p&p); *X-Wing* (£15.00 plus p&p) and *AT-AT* (£15.00 plus p&p). Additionally, AMT/Ertl's 2K **Trek** output will consist of the triple *Enterprise set* (£13.00 plus p&p), *Klingon Bird Of Prey* (£15.50 plus p&p), *Enterprise-D* (£19.00 plus p&p) and *DS9 Defiant* (£18.00 plus p&p).

Polar Lights

Available now from PL via Comet is the *Headless Horseman* from **The Legend Of Sleepy Hollow** (1:8 scale, £25.00 plus £3.00 p&p). Set for release in 2000 are *Madame Guillotine* (£20.00 plus £3.00 p&p, April); *The Hunchback* (£20.00 plus £3.00 p&p, May); *Salem Witch* (date/price TBA) and a new sculpt of *The Phantom Of The Opera* (date/price TBA). The *Beatles* kits mentioned in last issue's news columns will be released Nov, Dec, Jan, Feb and will contain alternative heads to convert the Fab Four as their cartoon selves into **Yellow Submarine** band characters. *Gear*, eh? £20.00



each plus £3.00 p&p (UK) from Comet.

Airfix

Due from *Airfix* in the first year of the new Millennium are reissues of their *Saturn V* and *Lunar Lander* kits, plus their legendary *Astronauts* plastic figure set. April sees the reissue of their 2001 *Orion clipper* complete with *Pan-Am* decals (which you can instantly put to one side and replace with a *Comet 2001* decal set for £5.75 plus 75p postage—tee-hee!). Prices TBA.

Revell

Expect a 1/48 special reissue of the *Gemini/Mercury* capsule with Buzz Aldrin figure and two mission patches late January. This is a US-only release, but limited quantities will be available from Comet at £14.00 plus £3.00 p&p.

Corgi

In January *Corgi* are reissuing their diecast *Range Rover* with *Steed* figure from **The New Avengers**; and, in May, their *XJS* with *Gambit* figure. Additionally, a new mini *Beatles Yellow Submarine* will be released at £10.00 plus p&p.

Godzilla 2000

Christmas sees the release of the Japanese movie **Godzilla**



Thunderbirds re-release 2000

It's official—the BBC are to rescreen all thirty two episodes of **Thunderbirds** in complete form beginning September 2000. Prints will be digitally remastered and feature enhanced sound quality. At the time of going to press I can confirm that a major toy manufacturer will be releasing an extensive range of toys produced exclusively for the UK market. These will include *Thunderbirds 1, 3 and 4* with lights and sound, a special electronic *TB 2* and a *Tracy Island* featuring 'Jeff's office' to rear with light-up pilot portraits and between 18 to 20 sound effects. Additionally three 12" talking dolls will be produced.



Special Edition Lady P

Classic Porcelains have released a special edition 22" *Lady Penelope* doll with silver ball gown and boa, plus certificate of authenticity signed by Sylvia Anderson, at £349.00 plus p&p from Comet. For a full release sheet on the new **Thunderbirds** items send an sae to Comet, who are now taking advance orders (£10.00 deposit required).

2000, with Comet set to import a range of merchandise based on the flick. A full list will be available by the time you read this—s.a.e. to Comet, please.

Warp 2000

Available now: *Honshu Nebula* conversion 3rd variation. In scale with *Ertl Enterprise-D*. *Nebula* class starship where the main saucer is used from the standard *Galaxy* class kit instead of the retooled *Warp* saucer. Conversion kit includes secondary hull, pylons, heart-shaped sensor array and decals. GRP resin — *Ertl Enterprise* needed to complete. £40.00 plus £3.00 p&p (UK).

• **Space: 1999 Eagle** transporter (12"). Same size as *MPC/Airfix* kit but entirely new patterning — accurate on a par with original 44" and 22" studio models. Details based on season one. Detachable standard pod. Full instructions and painting guide (including striped rescue *Eagle*). Includes correctly scaled colour *Alpha* logo decals. GRP and white metal. £50.00 plus £3.00 p&p (UK).

• **Space: 1999 Eagle Hangar** (1:350 scale). Detailed underground *Moonbase Alpha Hangar Bay*—includes base, roof and side walls plus walkways, platforms, handrails, ladders and replica work lamps.

Warp hope to offer an additional separate *laboratory pod* if time and costs permit. GRP/white metal/etched brass fittings. £39.50 plus £3.00 p&p (UK).

• **February: TV version Batmobile** (1:24). Featuring

clear canopy, interior detail, opening doors. Etched brass super detailing for front grills. Decals for Bat logo and lining. Kit may feature rubber tyres if a suitable commercial match can be found. £60.00 plus £3.00 p&p (UK).

• **March: Alien APC** (1:16). Eighteen inches long limited edition kit. Accurate tyre tread (resin) wheels, poseable front and rear. Hollow cast GRP. Tinted glazing and headlamps. Alternative armaments not seen on previous kits. Plus decals. £199.00.

Dates TBA:

• **Starship Troopers Bug C**, yes, it will get made! £60.00 plus p&p.

• **B5 Agamemnon Earthforce Destroyer**. 18" length; GRP, white metal and etched brass. Decals for at least six other ships. £60.00 plus p&p.

• **Blake's 7 Studio Sized** (1:1) *Pursuit Ship*. Large scale hollow cast GRP and white metal—18" length. Price TBA.

Martian War Machine. Over 30" tall. Specially commissioned by Comet. Tri-legged. GRP and white metal. Price TBA.

• **Space: 1999 Eagle Laboratory Pod**. Additional pod for *Warp Eagle* kit. GRP and decals. £20.00 plus £3.00 p&p (UK).

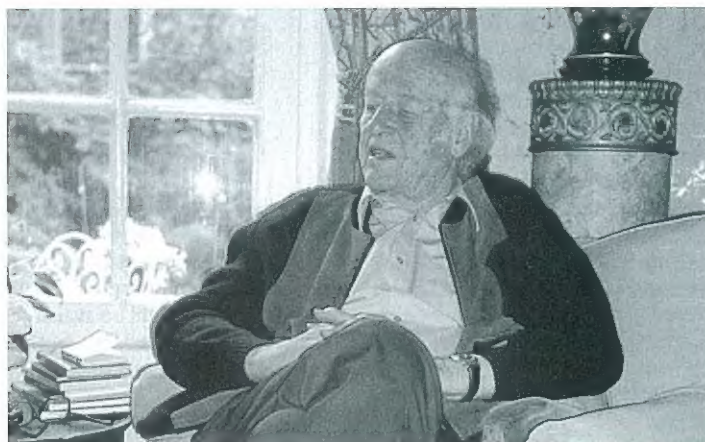
• **Space: 1999 Eagle Freighter Pod**. Additional pod including cable and pickup. GRP and white metal. £20.00 plus £3.00 p&p (UK).

• **Space: 1999 Eagle Booster Pack**. Kit features top main pack and side boosters. GRP and white metal. £20.00 plus £3.00 p&p (UK).

FX Masters—the Ray Harryhausen interview

martin gainsford

part two



In the concluding part of Martin Gainsford's exclusive interview with stop motion movie maestro Ray Harryhausen, Ray comments on past and current FX techniques, details projects that were never made, recalls his association with Irwin Allen and gives his opinion of today's computer generated special effects.

Martin Gainsford: It is well known that you personally handled virtually all the animation for your films. Can you expand on this?

Ray Harryhausen: Well it was a great sense of power, with me controlling people's lives (laughs)—I was in charge of everything (laughs). No, seriously, the problem you have with animation when you involve others is that it can break your concentration. Someone might ask you the time or something or other and you lose your concentration and the thread in your mind of where the figure is heading or where it has just been is lost. When I was doing *Mighty Joe Young*, we put up canvas partitions to keep us apart so we were able to concentrate on each scene without being interrupted. The thing was we had to have a projectionist and he would load the film and just sit and read the newspaper all day. I felt that I was the only one who seemed to be working.

Obviously the cameraman and the electricians were lighting the sets but as I went on I really found that I preferred to work alone. Although I would do the large sketches and then 'rough it out' when it really came to animate a sequence all the movements had to flow as a real animal would so it really meant I had to have 100% concentration.

The sequence in *Sinbad and the Eye of the Tiger* when Jane Seymour plays chess with the ape was a scene where I found that I had to almost 'act' through the character as he had to react to her and show emotion as well as actual movement. With a scene like that I just couldn't afford to have any other outside distraction. Another very difficult shot was in *Jason* with the *Hydra*. You had all the heads going backwards and forwards and lashing out and I had to remember and have fixed in my mind what was going on. If someone had spoken to me,

even briefly, I would have lost my vision of the scene and been in trouble. So I must say that I have found that my best work is the work I have done alone. This obviously made my working hours terrible. At the time it didn't matter because I cared so much about my work.

MG: What state are some of your stop motion 'stars' in today?

RH: As they were made primarily of rubber they have deteriorated and some are really rotting. You may know that I have been making some bronze replicas of some of the creatures and these will obviously last forever. Some of the figures that I still have are so delicate that if you were to handle them they would just fall to pieces. Some time back a man who you may have heard of, Martin Bower, assisted me with the creation of some characters using the original moulds and these were painted like the original models and they will also last forever. His work is very good and

he does some wonderful models of space ships and that kind of thing.

MG: What scene, from any of your films, makes you most proud?

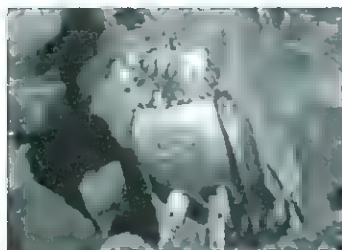
RH: It is hard to say, but I was very happy with the scene in *Mighty Joe* when *Joe* is tinkering with the lion's cage and John Ford himself congratulated me on my work on that particular sequence of the picture. Then there was the skeleton sequence in *Jason* and, later on, the *Medusa* in *Clash Of The Titans*. I really did enjoy the complexity of the movements of those characters, even though it was very difficult at times. With *Medusa* I had to keep the snakes in her hair writhing and get her to move and also, as she was part human, I had to make sure she was an expressive character and not just a monster.

MG: Are there any scenes you wish you could have done again?

RH: Oh yes. Every picture I made had a scene which I wasn't completely happy with but with film making as it is you have to keep going all the time and you work to deadlines and sometimes you have to let something go. I am always proud of the fact that



A selection of Ray's creatures from *Clash of the Titans* (1981).



95% of the scenes in the final pictures are the first takes. Nowadays with CGI you can go back exactly to a shot and go over it again until you're happy with everything and you just can't do that with stop motion. If something goes wrong you really need to go back and shoot the whole sequence. Sometimes if I wasn't happy with a shot I would do a scene again but find that it was better the first time. I really always found that the first takes were usually the best. It is good to appreciate things and to consider different aspects of a scene but I have found that if you begin to analyse things too much it can all go wrong. Often it is better to have your mind set on something and to let it flow.

MG: As a person who was responsible for a remake of an old 'monster' movie, *One Million BC*, what do you think when popular old movies are remade?

RH: I think that it is fair to say that the Victor Mature picture isn't what you would call a 'classic', so I didn't have too much of a problem with doing it again as they used blown up lizards and men in rubber suits which weren't too convincing. For me problems

occur when people try to do something with pictures that are considered classics or which mean a great deal to people. One of the films I most care for is *King Kong* and I have to say that the 1970's version was not particularly inspiring. The original had all the qualities of an 'inspiration' and those were missing from the remake. It is hard to describe but that's how I feel. *Kong* was awesome and I remember seeing a colourised version and it just took it out of its time—do you know what I mean? It's like when they added colour to Laurel and Hardy—it takes it out of its period and kind of spoils it. I recently saw a colour version of the original *Mighty Joe Young* and it was dreadful because all of the glass shots and paintings ended up looking exactly like what they were, but in black and white it worked splendidly. Willis O'Brien developed a technique to create depth in black and white by having a medium colour ground and a lighter background just as we all saw in *Kong*.

MG: What comment can you make on movies which used other techniques to create creatures?

RH: I don't think that sticking fins onto crocodiles and iguanas works particularly well. I had decided to use this style of filming at the start of my *One Million Years B.C.* with Raquel Welch. I was wrong but at the time I thought that if I used this style at the beginning of the picture, when my animated dinosaurs appeared they would appreciate how much better they were. I actually think it was a mistake and I do regret it. Many producers were frightened of the cost of stop motion but, in the long run, they would have saved money because you have control over things. With real lizards with bits stuck on you end up using miles of film on animals who would rather be asleep or would prefer to walk in the opposite direction to the way you want them to go. To encourage them to fight is difficult and really terribly cruel. A five year old child will look at a scene with an enlarged lizard and know that that is exactly what it is. That reminds me of a lovely story when a small child came up to me after a private showing of one of the dinosaur pictures and said, "Mr Harryhausen, you really don't know anything about dinosaurs because pterodactyls don't have 'bat' wings." Now this little child was very keen on that sort of thing and was, of course, exactly right and I explained that as a film maker I had added the 'bat style' wings to convince viewers of the ability the creature had to fly. So I do sometimes use a little creative licence but generally I would be as true to people's understanding of dinosaurs as possible—but the films were made to entertain.

MG: Can you tell us your feelings regarding the *Godzilla* movies from *Toho Studios*?

RH: Must I reply? (Laughs.) No, really, the first film they did was a copy in many ways of *The Beast From 20,000 Fathoms*, and they made it cheaper because, as we all know, they just put a man in a rubber suit. I don't think that the recent remake in anyway enhanced the general public's thoughts of the original and I'm sure that the people who follow the originals were disappointed too. One of the fascinations people have, and I know that I felt like this when I saw *Kong* as a young man, [is] because, even though you know it isn't real, you are still intrigued by how the

effect has been achieved. With men in suits and lizards with fins stuck on, however, you know immediately how it is done. The scene in the Hal Roach *One Million B.C.*, with the man in the suit, is just ridiculous and the suit is so bad that they kept it half hidden behind bushes and trees. It was just dreadful. When I came to do my version of that scene I really felt that I wanted to show how that particular scene should be done properly. Many people tell me it is a favourite sequence of theirs, although everybody loves the skeleton scene in *Jason*. Those skeletons were actually choreographed months previously when I had a team of stuntmen with numbers on their backs fighting with the actors so I could make a note of who was going where and who was fighting who.

MG: Did you experience any artistic problems with scenes of that type that would have involved the film director, stunt director, yourself and a bunch of actors too?

RH: Basically, with complex sequences like that, I would be in conference with all the various people months before the scene was due to be shot. With the skeleton scene I first plotted things out with the fencing instructor Fernando Poggi, who was actually one of *Jason's* crew mates. If you recall, all his men were experts in one field or another and this man was supposed to be the greatest of the Greek swordsmen. In between filming he would put Todd Armstrong and the stuntmen doubling as skeletons through the various moves. Don Chaffey worked with me on all the scenes involving my creatures but pretty much left me to direct the actors as I was having to think ahead when I would be adding the other elements. By the time we were shooting scenes in all the pictures I had a very good idea of how things should be looking as I had thought of nothing but the picture for months and I had put together all the sketches so we never really left anything to chance. Don was a good director and I must be honest and say that he was one of the few directors who really understood a picture like the ones Charles and I were doing. We did a couple together. Some directors felt I had too much power and were worried I was taking the picture away from them. I had

to keep control of things because I had to work with the footage which was sometimes six months old by the time I came to work on it and if it wasn't suitable we couldn't just shoot it again—it had to be just right as we didn't get a second chance. There was always the chance of a clash between myself and the director but, usually, it was fine.

MG: Many of the people who were admirers of yours came to work with you or, in some cases, on rival productions. Can you comment on any of them?

RH: That's right. I suppose it was like me and Willis. The two main people I can think of are Jim Danforth and David Allen, but I know that a great many film makers and effects people were influenced by the films Charles and I were making back then. I think one of the reasons I have these admirers is because I don't think that people who liked fantasy adventure movies had anybody else to really look up to and follow. We really were the only people doing it and doing

it properly. Films tend to go in cycles. The films we see now—you know **Godzilla**, **Lost In Space**, **Jurassic Park**—all those kinds of films, they all follow a cycle. We have had 'cowboys' and 'disasters' and 'cop' pictures, but I was fortunate to find that my pictures carried on through all those things for a great many years. But as you asked, both Jim and David were big fans who wrote me letters and told me what they were up to and another was the famous director John Landis, and he still has the letter I sent back to him in reply when he was a young man. I remember my relationship with Willis, so I always tried to reply to letters and stuff if I could. Apparently John has the letter framed in his living room. David Allen did a very good recreation of *Kong* for an *IMAX* presentation and I believe he did some television adverts based on *Kong* which managed to capture some of the look and style of the original. I am proud to think that our films inspired these people.

MG: Excepting **Jason**, probably your most popular films were those in the **Sinbad** series. Can you comment on the various actors who played the lead?

RH: Well, as I think I told you, Kerwin Matthews was excellent. He was a good looking man who was very athletic and I got on with him very well. He was great in action scenes with the creatures and he had a great vision of what I wanted from him. He really managed to look as if he could see the creatures when he was fighting and that added dramatically to the success of the scenes. When we did things like the *Cyclops* in that same picture we would rig up a huge pole with an eye painted on cardboard to give the actors an eye line, but with close quarters fight scenes it was far more difficult and Kerwin was fantastic.

I also liked the other *Sinbads* we had. John Philip Law really looked the part and Patrick Wayne was a very good leading man to work with. On all the pictures we were able to use some of the best British actors and I really enjoyed having Patrick Troughton on two of the pictures. He was in *Jason* and the last *Sinbad* with Patrick Wayne. Sometimes we were criticised for the leads but our supporting casts were always top class. I mean, in *Clash Of The Titans*, we had all the great

actors and actresses of the time including the greatest of them all, Sir Laurence Olivier. Even then some critic or other said that Sir Laurence looked like a tired old man in a night gown and all the effects and good performances were ignored by this particular critic. I just think that some people don't understand our kind of picture and want to just pick them to pieces.

MG: Are you aware of the admiration the people at *ILM* have for you?

RH: I am proud to know that so many talented effects people the world over respect what I have done over the years but I do know that some of the *ILM* people are particular admirers. In fact, when I got my *Oscar* I also got a picture of myself working on *Animal World* which had been signed by all these *ILM* people. There were people like Dennis Muren and Phil Tippet on there. I also admire work that they have done. I was very impressed with the sequence in one of the *Star Wars* films with the snow creature running along (The opening scene in *The Empire Strikes Back*)—the camera was moving as the creature was running across the landscape and it was just beautiful. I would have loved to have been able to do things like that myself but we just didn't have the technology at that time. I thought *Jurassic Park* was very, very impressive but I always feel that, using stop motion, you can add a sort of dream-like quality to a scene and you can't get that feel if you attempt to make things very realistic, which they of course do magnificently today. The effects in *Jason* and *Sinbad* make it all look like a kind of fairy tale and I think it worked very well for us. I think it is like asking a painter to paint a photo-quality picture. You may as well just take a photograph. I like to make things appear out of the ordinary and I wanted to achieve that effect. Computers do great things but they should be a tool and not the basis of a film maker's inspiration.

MG: Were you involved in the creation of the large scale sections of various creatures often seen in your films?

RH: Actually I wasn't. I was always very busy and, more



The Golden Voyage of Sinbad and 7th Voyage of Sinbad.

often than not, the prop department were responsible for these things. Sometimes I was involved as a sort of supervisor but it all depended on my workload at the time the thing was being built. I was impressed with the plans for many of these props but when I saw them I was often disappointed. *Kali* in one of the *Sinbad* pictures was an impressive, large size model but, as everybody comments, the face is nothing like my figure. So that was a problem because, as with any picture, you have a budget and a schedule and by the time I saw it on set it was too late to do anything about it. I really regret that I didn't just say, "No you are going to have to do another one," but, you know, I had to make a picture. It was like I said before about working alone and not getting others involved. It really isn't any kind of ego thing, it is just that one person's vision or understanding of something is always going to be slightly different to another person's. I knew with the *Kali* sequence that it was going to be a memorable scene like the skeletons and we were in England and the large model was being built in Spain so I just couldn't check it over until we were over there to film and it was just too late to change it. Hopefully it didn't spoil it for anybody too much. I still squirm every time I see it, even now. I should have put my foot down and said, "Do it again." Many of our pictures were on fairly small budgets so all this had to be taken into consideration and, even on a big movie like *Clash*, we still had to cut corners here and there to bring the picture in on time. That's film making. We made these pictures at a price and we sometimes had to compromise on things.

MG: Can you tell us about some of your projects which never made it onto the big screen?

RH: One which we wanted to do was *Conan*. This would have been in the late 1960s, early 1970s. We looked into the rights but it all fell through. I never did see the Schwarzenegger version so I can't comment on that. We were approached by someone to make *The Hobbit* and also some of the Edgar Rice Burroughs books, but not *Tarzan*—the *Mars* books with *John Carter*—but I think they ended up being done by someone else at around the time *Golden Voyage* was being made. We were planning to have

a further *Sinbad* film set on Mars. We had a very good idea to get him up there and there would have been a *Ming The Merciless* type of ruler and it could have been very good. We probably would have had a new actor playing *Sinbad* but things happen in films and at around that time *Clash Of The Titans* fell into place and took over my life for a long time.

MG: Admirers of your works are often followers of other film makers too. Can you tell us about your involvement with one of these—Irwin Allen?

RH: I did *Animal World* in the late 1950s for him. He was doing this documentary style film and he called me up and asked me to get involved. He asked me if I had any footage that he could use. I had some 16mm stuff which he blew up. The footage was filmed with 16 frames per second, not 24, so it all seemed pretty fast. Anyway, Irwin decided that he wanted to expand the dinosaur sequence and so he got Willis O'Brien to help him in the design of the creatures and I did the animation. It was pretty simple stuff really, just table top set-ups, but it was all right. Then he decided to make these big rubber sections of the dinosaurs for fight sequences, which I didn't think were very good, and he was involved in the direction of those but he wasn't in control of my models and I think he was a little annoyed with that. Then he did all those space things on television and in the 1970s he was responsible for all the disaster films, which were great. I was hoping to do a disaster film called *Deluge* but it never came to anything. Water is a pretty difficult element to miniaturise but it can be done successfully if you know what you're doing. I actually put together some stuff and went to *Hammer* with it but they weren't interested. It was based on an old film about New York sinking down in the sea. It was around 1933 and it was a film which impressed me as a young man.

MG: Can you tell us more about the bronze figures you have made?

RH: Yes, the main reason I did them was because the original figures from the films were rotting away. Also many of my famous creatures had been 'cannibalised' after filming to

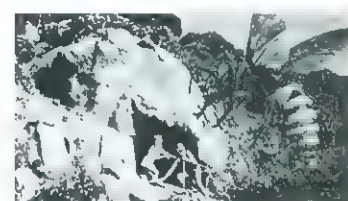
become creatures for the next picture as the armatures were very expensive and if I felt I did good work with one I would prefer to use it again. Years later it could now be regarded as a mistake to do this but at the time we were making films at a price and you had to do things like that. The creature from *The Beast From 20,000 Fathoms* was stripped down and became a dinosaur or something and the octopus in *It Came From Beneath The Sea* became a whole lot of dinosaur tails. I first decided to do a bronze of *Kong* as it was such a favourite of mine and I put in a tiny Fay Wray figure and she once saw my bronze of the scene from *Kong* and she laughed and said, "I was never that thin." Then I decided to create some other famous characters or scenes from my pictures and I've done *Sinbad* and *Kali* and some others and I enjoyed doing them a great deal.

MG: Are you familiar with some of the model kits based on your creations?

RH: There were a great many unlicensed ones and they were pretty crude but some were very good. Many of these came from Japan and the States. Now there are a couple of companies who are official and they do some good things. *Dark Horse* is one and, I think, *Monsters In Motion*. It is very difficult to control. A little while back I attended a huge model and toy convention and I don't think I have ever seen so many versions of the *Cyclops* and some were very good. One I did like was an almost life-size interpretation of the skull and I thought that was very original. It made me think of how the cyclops concept began. Years ago someone found an elephant skull and the gap where the trunk comes out led people to believe that it was an eye socket.

MG: It is surprising that your movies weren't more heavily merchandised at the time of their respective releases.

RH: Yes, that's right, but the thing was we didn't really think about all that at the time. I was always busy with the films themselves and the film companies didn't really understand all the merchandise thing back in those days. I must say that I think *Star Wars* changed all that. The first movie I did after the release of *Star Wars* was *Clash Of The*



Mysterious Island

Titans and there were a whole lot of toys and figures released with the *Kraken* and *Perseus* and the others. We never really had any idea that in the future there would be videos and laser discs of all the pictures. We just concentrated on getting them up onto the cinema screen. All of these aspects were never in our heads. I wish I had known because I could have been a millionaire (laughs).

MG: Your interest in fantasy goes back many years. Can you tell us about your early times as a fan of this type of subject and the friends you had back then?

RH: Two of my oldest and closest friends are names familiar to everyone who follows these kind of films, Ray Bradbury and Forry Ackerman. Forry, I met through a common interest in *King Kong*. Every time it was screened or re-issued I would go see it. Sometimes we travelled all over to see it. I used to travel out to a place called Eagle Rock to an old flea pit cinema and we would pay ten cents to see *Kong* or *The Last Days Of Pompei*—



A selection of Ray's creatures from *Sinbad and the Eye of the Tiger*.

stuff like that, but they would always have these lovely stills from the film—especially **Kong**—and I asked the manager could I photograph these stills as they were so impressive. He told me that they weren't his so he couldn't really give permission, but he told me they were owned by someone called Forrest Ackerman. I got his address and he allowed me to photograph the stills and our friendship began. He told me about the meetings in *The Little Brown Room of Clifton's Cafeteria*. All the local fans of horror and science fiction and fantasy would meet to talk about space and dinosaurs and the latest books and movies every Thursday. One time we had an Egyptologist who gave us a talk on his subject and it was great. It was at one of these meetings that I met Ray Bradbury. He was a struggling young writer and he would be sending off all these stories to magazines and always getting rejection slips, but he kept going like we all did. Over the years he managed to get things published and, as we all know, he made quite a name for himself.

Some of his first work was for a magazine called *Imagination* and I actually did some illustrations for it. He was 'nuts' about dinosaurs and so we always had a lot to talk about and we became great friends too. We were all

together on a panel at a convention a little while back and we got talking about our first meetings and the old days, great days. I actually worked with Ray on **The Beast From 20,000 Fathoms**. We both were hoping to do something together and it came about by accident really because that film was based on a story he wrote. We were all fans of HG Wells and Jules Verne and that kind of writing so we all had a great deal in common. That was one of the reasons that I tried to do pictures based on some of those old books because they were favourites of mine.

First Men In The Moon was one I like a lot. That particular movie was shot in Wide Screen and I must admit I was a bit concerned about this and we did have a lot of problems. I couldn't really use rear projection due to the Anamorphic system, but in the end we did a test with an Anamorphic lens and that's what we used to film it and it wasn't bad, really. I had similar problems on **Clash** and I had arguments with people telling me, "It's your equipment." I was saying, "It's the film," and we finally found it was due to the spacing of the sprockets. About half way through we knew something was wrong. *Kodak* told me that they, "didn't just make film for special effects," which I thought was a pretty ridiculous thing to say. We always knew that we had to control everything precisely. The light had to be low because we only take about a second exposure or half a second. Then you do have to have a certain intensity of light or the colour goes peculiar. All of these things I learnt as I worked. On the first **Sinbad** we had only one kind of colour film and whenever you 'duped' it all the colour went out. Finally a low contrast film stock was developed which was a blessing for me as it took away some of my problems with colours bleeding or fading altogether.

First Men In The Moon is a good picture because we decided to keep it as a period piece like we did with **Gwangi**. Otherwise you just have the Army dropping a bomb on the monster or whatever and I like the idea of people against adversity with little or no technology to help them, just using their own skills or things that were to hand. When I was thinking of doing **War Of The Worlds** I wanted to

Celebrating a cinematic classic; signed by the maestro—this historic poster must be won.

Kindly donated to SF&F and signed by Ray Harryhausen, this stylish colour poster for the film **Mighty Joe Young** must be won in our free to enter competition.

For your chance to own this special prize simply tell us, on a postcard, the name of the mechanical owl featured in **Clash Of The Titans**.

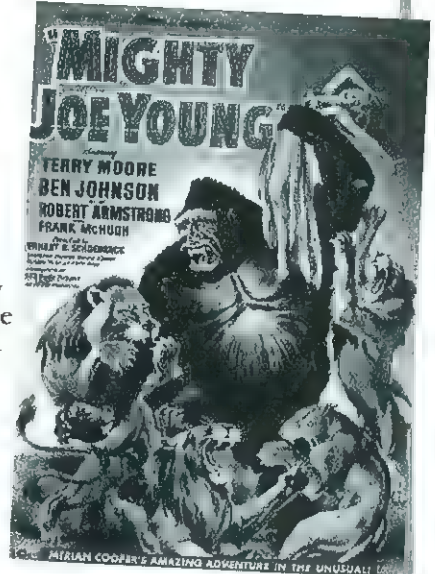
Add your name and address to your entry (only one entry per person, please) and send it to:

Mighty Joe Young Competition,
Sci-Fi and Fantasy Models International,
57, Lynwood Avenue,
Clayton-le-Moors, Near Accrington,
Lancashire, BB5 5RR, U.K.

To arrive not later than first post on Monday, January 31, 2000.

The first correct entry snatched at random from the company monster dungeon after that date will win the prize.

The winner will be notified by post and their name published in a future issue of this magazine. The judges' decision is final and binding and no correspondence can be entered into.



keep it in Victorian times too.

MG: Recently you appeared in the new version of **Mighty Joe**. It isn't the first time you have appeared in 'cameo' roles. Can you tell us about these appearances in front of the camera?

RH: It all started with John Landis when he was doing **Spies Like Us**. I was in a scene with Terry Gilliam from **Monty Python** and Derek Meddings from **Thunderbirds** and all those puppet films and **James Bond**. It was good fun because, as I told you earlier, John Landis was a fan of mine when he was young so it was nice to appear in one of his movies.

MG: What are your plans for the future?

RH: I do many conventions and

give lectures all over the world talking about my work. I often attend film festivals showing my pictures and I enjoy it enormously. I'm also working on a new book, so I'm still pretty busy.

MG: As a teenager you spent many hours talking with friends about fantasy, monsters and life on other worlds. If we were to be visited by beings from elsewhere and you met them and they asked you, "What is it that you do?" what would you do to sum up what Ray Harryhausen is all about?

RH: I think I would do what most people would. I would sit them down and show them **Jason And The Argonauts**.

Shots with thanks to Martin Gainsford and Jim Rodkey.
<http://lavenderfortunecity.com/judidench/584/harry.pho.html>

Phantom Menace kits—the second wave STAP with battle droid

chris brown

By the time you read this the second wave of AMT/ERTL kits from The Phantom Menace will have been in the shops for a month or so in the UK. The two new additions are a Trade Federation Tank and a STAP with battle droid—and what nice kits they are! They need no further introduction, so let's get on with the model making...

We'll begin with the *STAP* and *Battle Droid*, moulded in seventy-six parts in easy to work light grey plastic, plus a metal shaft for the base. The subject is modelled in a big, 1/6 scale, the kit making up via sixteen easily understood sections in pictorial form. The first ten cover construction of the *droid*. The *STAP* takes up five more and a final step brings it all together. I began with the *droid* as per the instructions.

This flew together and needed only a minimum of filler and a little work to hide the seams. The whole thing is articulated and flexible enough to slop around most comically when finished. He (it?) is fixed in position when connected to the *STAP* (of which more later). I sprayed the *droid* in accordance with the colours given in the instructions (nice and vague) and shown on the box top (a still from the movie). I found the best colour match for the beige to be *Tamiya* XF55 Deck Tan and this was sprayed all over and allowed to harden overnight. Finishing was accomplished with a much diluted wash of oil paint black mixed with a little raw umber to 'kill' the black somewhat. This was run into the recessed panel lines and around the body structures. I found I needed to go over the base colour, spraying again to tone the panels down. Panelling needs to be very subtle—refer to the box top illustration and published photographs and you'll see what I mean.

The *STAP* is made up in the next five steps and goes together without many problems. I did

have some difficulty in locating where parts 74 and 75 went and the order of assembly on section 14 but multiple dry



runs soon sorted out my confusion. Section 14 is the only place where I found the instructions could confuse. The *STAP* is, again, intended to be flexible and if you can keep it that way it will pay dividends later. I would also advise that you leave the two engines off in section 15 until after painting (I didn't and suffered for it).

The colour mentioned in the instructions for the *STAP* is overall rust. Looking at available photographs, the *STAP* also has scratches with bare metal showing through. To simulate these and give a good undercoat I went for the 'old faithful' *Halfords* Volvo silver metallic spray. This was allowed to harden and then, after masking the support column, the rust colour was applied. I find an undercoat of dark yellow or sand followed by a light spray of rust looks best. For this I used a base coat of *Tamiya* Dark Yellow oversprayed with a railway scenic enamel called *Railmatch* (404) Light Rust paint (*Railmatch* supply both light and dark rust

shades). I opted for the lighter as this more closely resembles the photographs (unlike the *speeder bike* from *Return of the Jedi*, which is almost a red brown). The rust was sprayed on allowing some of the dark yellow to show through in patches.

Smaller details were picked out from the instructions and the photographs. Finally I weathered the *STAP* with a piece of wire wool and scratched the top coats off, allowing the silver to show through. A brush and a silver marking pen applied smaller 'chips'. Exhaust stains from the guns, etc., were applied by mixing matt red brown (XF64) with a touch of matt black and free hand spraying the areas affected. I then went to a full black for the blast centres. I continued weathering the model until I was happy with the result. The base was given a spray of *Halfords* matt black and the writing picked out freehand by airbrush to simulate a glowing logo.

Next came the fun, fun, *FUN*—Attaching the *droid* to the *STAP*. I opted to use two-part

epoxy for a good bond but didn't bargain on the *droid* being like an over active puppet with its strings cut and the feet not being able to move far enough apart to reach the pedals. The only way around this was to fix one foot at a time and lay the *STAP* and *droid* on the bench until each foot was firmly fixed. I then used two-part epoxy to fix each arm and hand assembly to the handles of the *STAP* and the shoulders of the *droid* at the same time. Clothes pegs held the hands to the handlebars and a loop of tape and elastic bands the arms to the shoulders until the whole thing was fixed and set. The *droid* then took up its own pose, held by both hands and feet. The head was moved into a 'looking ahead' position and the model was essentially finished. The metal shaft was hammered into the base and *STAP* and *Battle Droid* attached to it.

Verdict

I loved this model. It's a really good subject and a really good size—a constant scale with AMT/ERTL's *Star Wars* vinyl character figures. Fit of parts is up to today's standards and detail is just right.

Nine out of ten.



Phantom Menace kits—the second wave Trade Federation Tank

chris brown

The second new offering to hit my bench was the Trade Federation Tank, made in the same plastic as the Battle Droid and consisting of forty four parts and a six-section set of graphic only (very clear) instructions.

Construction begins with the turret and continues with no setbacks at all. The only difficulty I encountered was in section five when the completed upper hull was joined to part 1—and that was my fault for completing the lower hull first. With hindsight I should have fixed part 1 to the upper hull first *then* completed the rest of the lower hull. Fit of parts is up to AMT/ERTL's best standards throughout and normal modelling practice of filing/sanding, etc., soon dealt with the few areas that needed any work. I assembled the whole model in about two hours with a further hour's preparation before the first undercoat went on (*Halfords Volvo silver met again*).

The finish was based on the instructions, which give FS numbers and percentage mixes, plus the box top and other available photographs. Two gentlemen, heroes of mine from my younger modelling days, Mr. Verlinden and Mr. Shep Payne, (I think), pioneered the technique I used for painting. This consists of a base coat lightened in the centre to simulate fading then a dark artist oil paint wash and, finally, dry-brushing the whole model to bring out the detail. Let's start with the base coats. I used *Tamiya* paints throughout for the base as these are acrylic and resist oil-based thinners. Colours used were Light Earth XF 52 for the brown colour at the rear of the lower hull (colour C in the instructions); Desert Yellow XF59 for the lower hull outer edges (colour B in the instructions) and Buff XF57 for the remainder of the tank. I worked from colour

C to colour A to keep masking minimal and easy. When the whole tank had been sprayed and the masking removed a much diluted XF57 Buff lightened a little with white was applied very

faintly over the upper exposed areas of all colours to simulate the sun bleaching effect seen on today's tanks. Then a dark brown/black oil-based wash was applied all over the model in sections and allowed to stand for a few seconds. The wash was wiped back to leave a stain in the panel lines and around the detail. This has the effect of adding depth and shadow to a model. When dry a very light drybrush of artist oil paint (very light yellow ochre and white

mix) was gently applied all over the raised detail and model's edges. This highlights subtle detail and makes it stand out. A few silver 'chips' were created using the same method employed for the *STAP* and, when these had been applied, free hand blast staining was added with my airbrush around all weapon outlets with the dark brown/black mix. The base was sprayed matt black (none of the lettering on the base was painted as you cannot see the

writing once the model is on the stand). My brief for these models is to make only what is in the box. If I were making this for myself I would replace all handles, etc., with fuse wire for a finer looking model and replace all the weapons in parts 3, 4, 5, 6, 7 and 8, the main gun and side guns with brass tube for the same reason. *Hannants* also do 1/35 scale tank accessory sets in etched brass which could replace some of the other external hull details (lifting points, etc.) but you would have to look and see what is available. A diorama of two or three of these is not out of the question.

Verdict

Same as for the *Battle Droid*. I like both of these kits. They are good value for money and a far better size than the first **Phantom Menace** issues from AMT/ERTL. Good detail and good choice of subject.

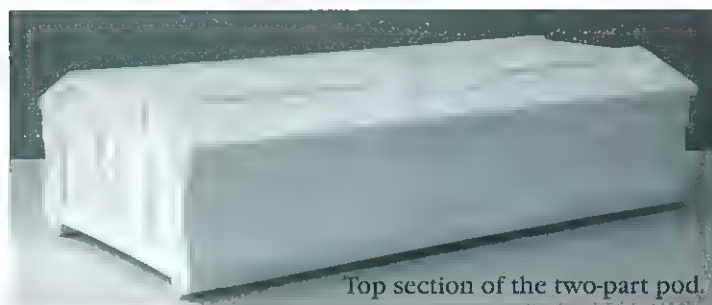
Nine out of ten.

Thanks to Paul at Amerang for the chance to make these models.

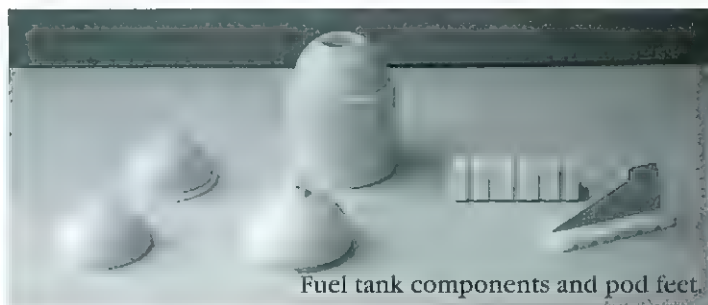


AB forty four inch Eagle— a preview

simon roykirk takes an advance look at a giant leap for garage-kit kind...



Top section of the two-part pod.



Fuel tank components and pod feet.



Beak rear section and clamps.



Aluminium engine bells and attitude jet nozzles.

“We don’t like to think of this as a garage kit,” commented Andy of AB Models during my recent trip to compile an early report on their much touted and eagerly awaited forty four inch Space:1999 Eagle kit.

I can see what he means. Although this *is* a limited run subject, calling it a garage kit somehow seems a little irreverent. Recent releases from several enterprising names in the ‘garage’ arena—*Warp*, *Studio 2*, and, of course, *AB*, seem, in terms of presentation, detail and finish, to be about as far away from some of the negative implications of the term as you can get. And this resin and multi-media subject pushes *AB*’s output into a still higher bracket, especially when you consider that the *Eagle* has been produced without huge company backing or facilities.

Still in component form when I called, *AB*’s prototype 44” *Eagle* lay sprawled out before me, almost completely covering a dining room table.

Despite being unpainted and in pieces, the craft was instantly recognisable—and jaw-droppingly huge.

Features

As with previous *AB* releases parts are exceptionally well cast and should need little clean-up beyond the expected basics. Here are some of the features the serious SF modeller can expect from their 44” *Eagle*:

- The massive two-part (front and rear section) ‘beak’ is hollow and will feature two astronauts already in place against the rear cabin wall (these pieces had still to be cast at time of viewing).
- White metal side cages are very clean—the ones I saw were fresh from the mould and would require

only minimal application of wire wool.

- The underside jets have been produced in *two* sizes to duplicate those featured on the studio miniatures (not a lot of people know that).

- The walkways that run between beak and pod and pod and rear engines are finely detailed, as are the ‘shelves’ that sit within the front and rear cages.

- Legs are fully articulated (ie: pivoting feet, working ‘elbow joints’ and, I’m told, spring-loaded legs).

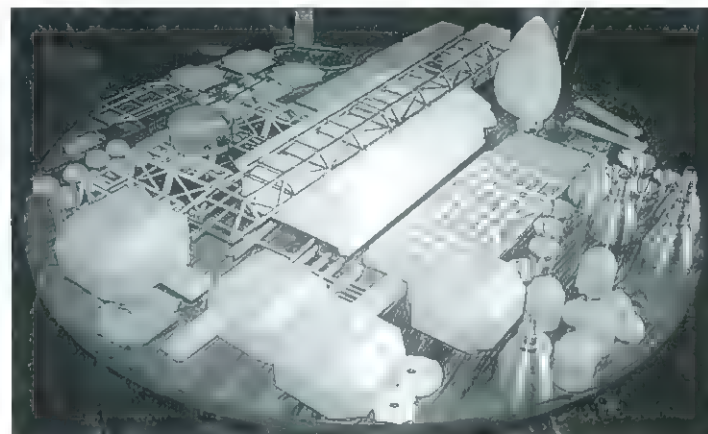
- Leg pods are ‘push-in’ sub-

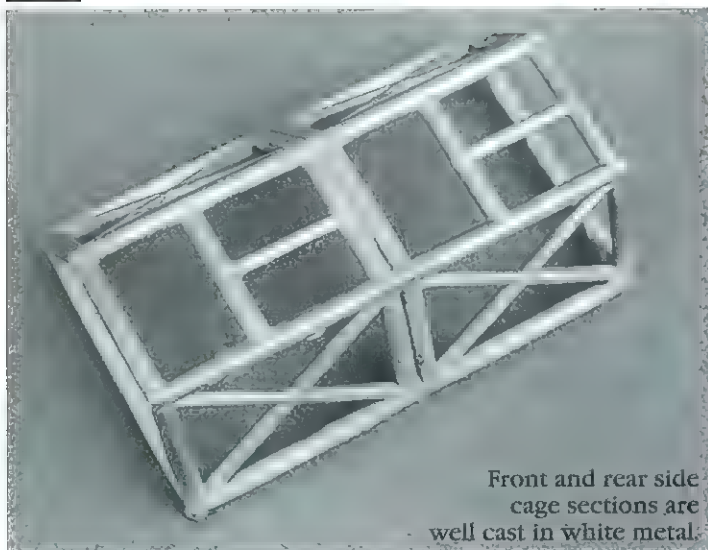
assemblies, as they were on the original.

- Rear engine bells are three inches in diameter and presented in flawless turned aluminium, as are underside bells and attitude nozzles.

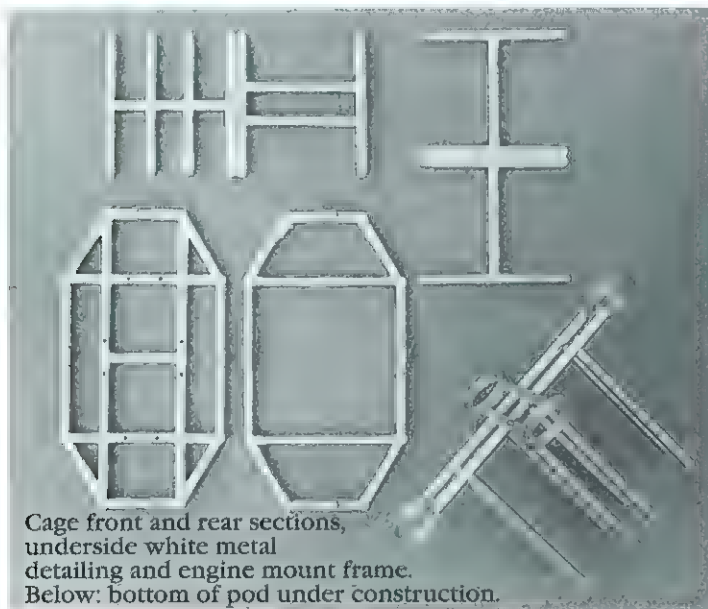
- The rear engine frame has integral ‘outrigger’ spars that connect to the main body—an improvement over *AB*’s 22” version which featured separate pieces.

- Engines and fuel pods bolt together, and spars and bolts are employed at various stages to simplify construction and add strength to the model.

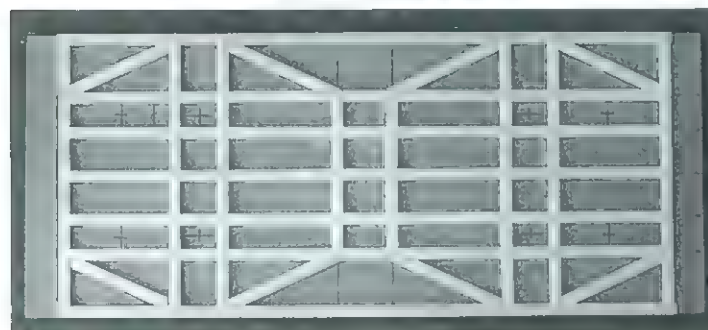




Front and rear side cage sections are well cast in white metal.



Cage front and rear sections, underside white metal detailing and engine mount frame. Below: bottom of pod under construction.



- The spine section will come as a one-piece soldered brass structure.

- The two-part, finely detailed pod attaches to the main body with steel strips.

Worth the price tag?

AB's *Eagle* isn't cheap. At £1,250 from *Comet Miniatures* it's not going to appear in every modeller's Christmas stocking, being a subject necessarily reserved for the very, *VERY* serious SF hobbyist with ever so slightly more than a couple of quid to spare.

Is it worth that amount? Well, why don't we find out together as I cover all aspects of construction in this magazine? The kit will be featured in a multi-part series beginning in a future issue. "Ah," you're saying, "but this will undoubtedly be a review kit so he's bound to praise it." This is definitely not the case, dear readers. For one thing, review kit or not, and as with all this magazine's reviewers, Roykirk never lavishes praise where praise is *not* due. For another, it brings tears to my eyes to tell you



that I have parted with my own hard-earned dosh to obtain an *AB Eagle*, and I'm only writing up its construction for this magazine because of the interest to readers and death threats from the editor should I not do so. I can therefore assure you that I'll be pulling no punches should I find anything untoward that needs to be pointed out.

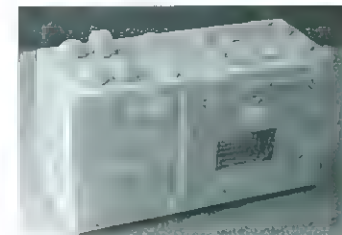
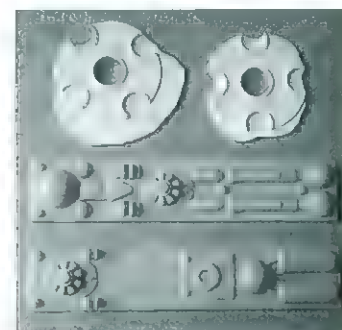
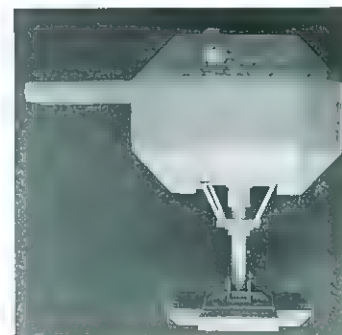
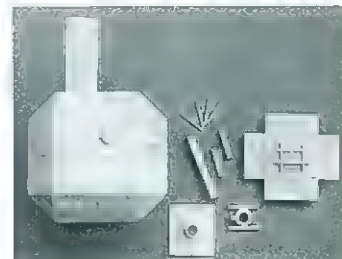
At this early juncture, however, I'll venture a personal opinion based on what I've seen thus far. If you've got the money to spare (or should that be 'invest'—a model like this is certain to hold its price) and the skills to finish the *Eagle* to the high standards required then, yes, I believe the kit to be good value for money. I've seen 44" *Eagles* built by model makers as commissions for clients being handed over in exchange for several thousand pounds (superb examples, I might add, and no reflection on the skilled modellers concerned). I'll stick my neck out and say that this kit, when finished, is capable of being every bit as good, and, in some cases, even better than some of those examples—and for a fraction of the cost.

Join me, then, in a future issue, and we'll place this awesome giant under the microscope as we put together what is, quite

Right: The *Eagle's* spine will be a one-piece soldered brass section. Prototype indicates its large scale.

possibly, the UK's first 'cottage industry' kit.

'Cottage Industry' kit... *Hmmm*—could catch on...



Top to bottom: leg pod components (and assembled); engine inserts and walkway 'shelf' detailing; beak front and walkway section.

'Attack of the Android Operatives'

Building Studio 2's SHADO Mobile kit

part two
mike reccia

"I don't remember androids in Gerry Anderson's 1970 live action series UFO," you're probably saying to yourself. "Aliens, yes, but androids? ..."

... Allow me to explain. I decided to begin building *Studio 2's* new *Mobile* kit by assembling the cabin (cockpit?) area. This comprises a detailed back bulkhead, a centre console, two-part seats, left and right dashboard consoles, the cabin itself with window openings and a sheet of transparent *plasticard* from which to form the windows. As the *Mobile* is a studio-sized (eighteen inches long) model it really *does* benefit from the addition of a driver and an operative. Scratchbuilding these would be a tedious, lengthy task and, with my limited sculpting skills, the resulting figures could well look more like the *hunchback of notre dame* than trendy '70s alien fighters. I therefore opted to convert a couple of 'action figure' toys which, judging by photographs of the actual studio miniatures, appeared to be to exactly the right scale. The two figures I had at hand presented a challenge, however... they were *both* *Commander Data* from *Star Trek: The Next Generation*.

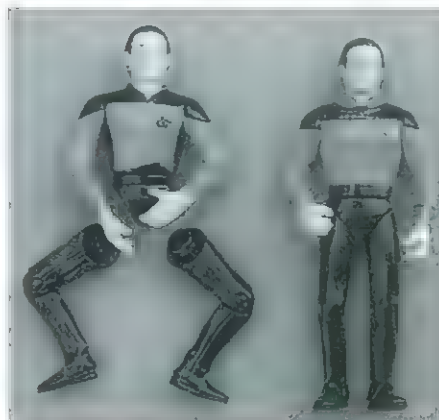
Dr. Reccia's torture shed...

Apart from the problem of them looking identical, these particular figures, although jointed at the hips, wouldn't 'sit down' properly. Bending their legs into a sitting position made them look more like the *Budweiser* frogs than *SHADO* operatives. My first task, therefore, was to carefully remove (saw) the legs from both figures. I then tried to reposition the amputated limbs (one set had joints in the knees, the other was static so needed to be sawed in half at the knee points) in a sitting position against the existing torsos, only to find that they still splayed outwards. Further brutal surgery was therefore deemed necessary. I carefully sawed through the central lug connecting the upper and lower torso areas, removing the lower torsos completely and discarding

them. This left two upper figures with arms attached and two sets of legs. The legs were positioned correctly (one set had already been glued at the knees into a sitting position) then two-part epoxied to the upper torsos to give me an area I could 'fill' around. Once the glue had set I mixed *P38 Easy Sand* car filler and roughly shaped it around the upper torso-to-leg-joins to create 'nappies' of filler to replace the lower torso sections removed earlier. Once hardened, the filler was contoured with a scalpel and sandpaper to resemble seated lower torsos which were carefully blended into the upper bodies and legs.

I wasn't through with torturing my *Datas* just yet, however, as I wanted one figure's hands to grip a set of 'control bars' that would be made later, giving the impression that this operative was driving the vehicle. As the hands were positioned sideways-on to the front of the body, it was necessary to cut these from one figure at the wrists and reposition them on the stumps so they would appear to be gripping the as yet non-existent bars. The arms of the other *Data* were positioned as though he were holding something (the *something* would be added later) and superglue was run into the joints to set them in this pose.

I carefully removed the *Starfleet* pointy sideburns from one of the heads with a scalpel and cut plastic away from the cheek areas in an attempt to make one *Data* appear different from the other. The *Starfleet* communicator badges were cut off the chests of both figures, as were the 'pips' from the stand-up collars (fortunately, *SHADO* operative uniforms featured the same type of collar) and the ridges from the jacket fronts. All joints were then glued,



Left: *Data* figures. Centre left: severed body is glued to the tops of the legs prior to filler being added. Centre right: legs are re-attached to the torso in a seated position. Bottom: *Paul Foster* and *Mark Bradley* 'look-alikes' (the less-than-perfect knee joins on *Bradley* would be hidden once the figure was in place).





Side view of the *Mobile* with its two man crew in place.

filled and sanded, the soft plastic lightly sanded all over with fine sandpaper, and both figures given a coat of spray plastic primer (developed for car bumpers), an essential base coat on this type of plastic which gives the top coats a surface to key in to that they can't peel away from.

From Starfleet to SHADO

Paint was one way I could differentiate between the two formerly identical figures. I

therefore decided to paint one figure up as a *Paul Foster*-type* white operative with brown hair, 70's sideburns and beige coloured *SHADO* field uniform and the other figure as a *Mark Bradley*-type** black operative in blue *SHADO* field uniform. A strip of white *plasticard* tightened around the waist and glued at the back became the belt for the *Bradley* figure and I fashioned a pair of those funky, futuristic *SHADO* binoculars from an oblong kit bit rounded at the sides and glued them into

his right hand. A length of wire became the strap for the binoculars, glued at both ends to them, bent around his head and painted matt black. *SHADO* badges were hand painted onto the chests and headsets were fashioned from small lengths of wire and glued around the heads. By this stage the figures not only looked like *SHADO* operatives but were also completely different characters with contrasting uniforms and facial features.

Cabin interior

With the 'crew' completed I could turn my attention to the cabin interior. The two seats were positioned and glued in place, as was the rear bulkhead, which required filling around the bottom and side edges. The centre console was epoxied into the floor well centrally between the two seats. The left and right front consoles were sanded and primed after first scalpel away detail from the centre of the left-hand piece to enable me to glue a set of control bars in place.

The full size *Mobile* interior set differs in detail from shot to shot in the series (and also doubles for the *Moon Hopper* cabin set!). Sometimes the set sports twin control bars for the left hand seat. Sometimes it features both left and right hand bars.

Sometimes there are control bars on the right hand side and twin weapons joysticks on the left. I decided I would go with control bars for both the driver and his companion. These were fashioned, as per the instructions, by bending small lengths of the brass tube supplied into 'L'-shaped pieces. Hand grips were then added by wrapping the end of each bar with adhesive black model car pinstriping. Holes were drilled in the left-hand console to accept one set of bars. The other set was glued into the hands of the 'driver' and a small rectangle of *plasticard*, painted matt black, glued across their free ends so they would appear to be attached to the console once the cabin top had been added.

The seats were painted matt black, the front consoles detailed and finished off with small decals from the spares box, and the interior of the cabin and cabin top piece spray primed and painted matt light grey. Various 'lights' and bulkhead details were painted in using studio shots as a guide.

Inset or flush—the great window modelling debate

The greatest challenge in assembling the cabin was the forming and fitting of the windows. *Studio 2* have sculpted an inset ridge around the back of each window area, allowing the transparencies to be cut slightly larger than their exterior dimensions and glued into place behind each opening for a neat finish. This is a great idea, but I wanted a finished model that would resemble the studio miniatures as closely as possible. The windows on the studio models were *flush* with the cabin sides. If you look closely at stills you can see a very slight ridge 'framing' each window area. This is the result of the window pieces being cut slightly larger than their required size then being set into the cabin. The edges would then have been sanded back to the

SCULPTING MODEL MAKING



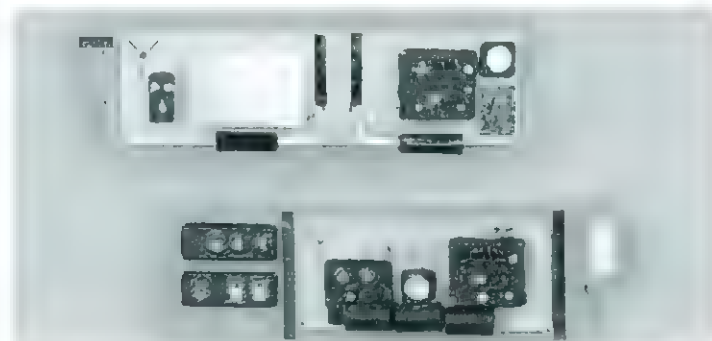
everything for modelling,
flexible mouldmaking, casting

Super Sculpey, Chavant, waxes
square all wire, copper armature wire,
metal modelling tools, dental tools, spirit lamp
alginate, silicone rubber, latex, gelflex
polyesters, fillers, clear casting resin, urethanes,
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Front view of the Mobile cab—the second shot shows the seats in position and the control console between them.



The painted interior and *Foster* and *Bradley* in position (note that UFO, being U.K. based series, featured the *Mobile* as a right hand drive vehicle).

cabin dimensions and spray painted in the body colour, resulting in flush windows of a smaller area than the original set-in pieces. Obviously I couldn't replicate this without a great deal of work, but I *did* want the windows to appear flush and not inset. I therefore painstakingly cut each side window to be a tight push fit with its surrounding frame. This was difficult enough, but it was the front windows that presented the

greatest test of my patience. Not mentioned in the instructions is the fact that these *curve* at the outside edges to follow the cabin lines and, whether you're making them a flush or an inset fit, the curves are essential to ensure a proper fit.

How to create this feature? I first tried heating lengths of the *plasticard* over a candle then bending them whilst hot, but this resulted in a

disappointing, uneven finish. A hair drier didn't put out enough heat, so I eventually used my paint-stripping gun to heat up a small area at one end of each front window piece. Whilst this was hot I bent it around a length of copper tube by tightly trapping the heated section between the tube and a flat surface and pulling the cooler back section up against the tube to form a uniform curve in the heated area. Shaping the

windows was then a matter of continuously test-fitting, sanding and cutting until the pieces matched perfectly with the cut-outs in the cabin. The whole process took a full day.

Non-fogging superglue is ideal for fixing the resultant pieces in place, but, as I didn't have any to hand, I opted for tiny amounts of two-part epoxy applied from behind the windows openings with the point of a nail. Any slight smearing on the edges of the windows would be covered later in the construction process by the black edging 'rubber' strips that can be seen on the studio miniatures.

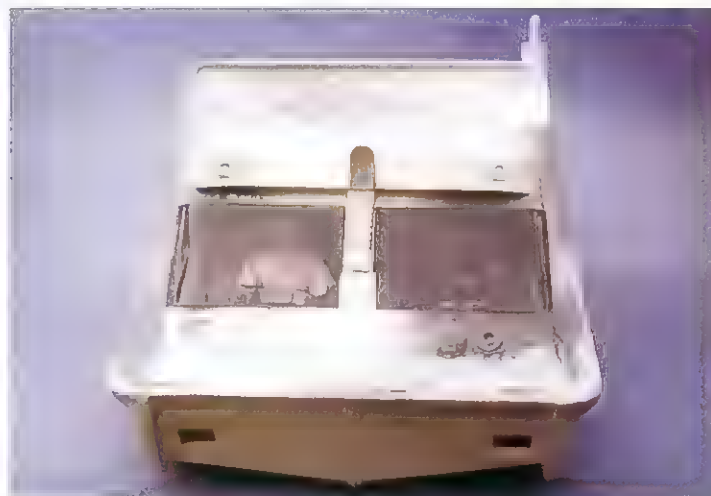
And finally...

...For this issue's installment I glued the figures (two-part epoxy again) in place; stuck the completed front consoles to the inside of the cabin section then glued the section to the front of the body. Quite large gaps resulted at the back, where the rear of the cabin should fit flush with the rear body, and at the front where the cabin sits into a curved lip. Both areas were filled with P38 and sanded smooth, contours being adjusted as necessary as I sanded back to the filler.

The addition of figures does a great deal to 'sell' the scale of the vehicle and, with the single most difficult aspect of the kit sorted out (the windows) I was happy and ready to move on to the next stage of construction.

Join me next issue for more Mobile modelling...

"Colonel Paul Foster was seen in most episodes of the series. "Moonbase Interceptor pilot Mark Bradley featured in fewer episodes. He can be seen as a Mobile driver in the episode Computer Affair."



Left: those darned windows and right: front view of the *Mobile* cab with roof/windscreen in position.

Welcome to The Garage Kit Professor's Laboratory

Blast-Off in a Classic: Rocky Jones—Space Ranger XV/2 Orbit Jet

story and photos lee shargel



Lee Shargel,
The Garage Kit Professor, reviews
the new kit from
Scifimatters.com.

A Spaceship is Born

I knew it would only be a sci-fi matter of time before Gary Rocchio (pronounced Rocky-Oh), proprietor of scifimatters.com, would turn to creating classic garage kits as well as selling them. Here was a promising (and highly paid) executive whose career literally went from the ivory tower straight into the garage and we can all be thankful that it did. With over fifteen years of employment, Gary Rocchio had become vice-president and director of marketing at one of the largest publishing corporations in the U.S. Even in this lofty position he felt something was missing. After a run-in with his boss (been there, seen that!) it was time to follow that dream. The result was scifimatters.com, one of the premiere internet sites offering the best in garage kits today. Finally, I am very pleased to say that the time has come. His

new kit, the *Rocky Jones XV/2 Orbit Jet*, designed exclusively for scifimatters.com by John Geigle at *Masterpiece Models*, is a testament to the classic sci-fi television serial of 1954, *Rocky Jones—Space Ranger*.

First things first

Every time I begin a project, be it a novel, a screenplay, garage kit or a scratch built special effects monster or miniature, I always do my homework. Especially when it comes to building a sci-fi garage kit. I find that researching the subject goes a long way in allowing the builder to infuse some realism into the project. The *XV/2 Orbit Jet* is a perfect example.

From Penamunda to Posita

Rocky Jones and the *Space Rangers* zoomed onto American TV screens in January of 1954. (I am not sure if the show ever made it overseas, but no matter, video tapes of every episode are available via the internet.) The *Space Rangers* were kept busy fighting foes from such obscure places as the planet *Fornax* (yes, that's right, I said *Fornax*!), *Posita*, *Cryko*, *Regalio* and other planets too numerous (or could that be ridiculous) to mention. No matter, it was the year 2954 (according to the Hollywood calendar) and *Rocky*, along with sidekick *Winky*, science advisor *Professor Newton* and the extremely voluptuous *Vena Ray* battled various villains and villainesses across the galaxy.

They traveled in style in the *XV/2 Orbit Jet*, a spaceship modeled after the German designed V2 rockets of world war II. It seemed that most of the special effects designers of '50s TV serials took a crash course in rocket building from Werner Von Braun and the other Penamunda scientists. In case you haven't noticed, the *XV/2 Orbit Jet*, along with several of its derivatives, got plenty of airplay in such movies as *Destination Moon* and

numerous *Twilight Zone* episodes.

Looking back, I can tell you that the scripts were horrible and the acting even worse. Of course the demographic group they targeted (6 to 10 year old kids) could care less about production values. All we wanted was *Rocky Jones*, the *Space Rangers*, (*Vena Ray*, in many cases—*Grrrrrrrrr!*) and, most of all, the *XV/2 Orbit Jet*. As far as the special effects were concerned, they weren't as bad as you would expect for a \$40.00 budget. Yes, that's right, in 1954 forty bucks went a very long way. *NASA* could learn a thing or two about building spaceships from these guys.

Now, at last and almost fifty years later, the original *Rocky Jones—Space Ranger* episodes are available on videotape and the *XV/2 Orbit Jet* can be purchased exclusively from www.scifimatters.com. I purchased several episodes of the show as part of my research for this kit project and was pleasantly surprised after all of these years at how humorously entertaining they really were. Yes, those *were* the days!

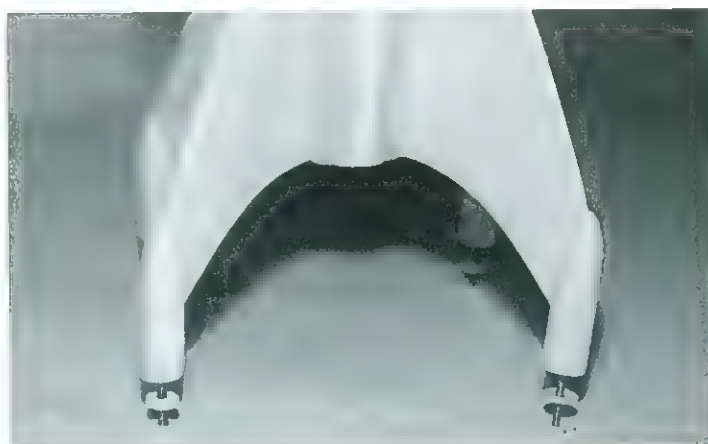
Okay, let's build a rocket!

Oh! By the way, for those of you who have suffered the agony of mail-order (via the Internet,

etc.) and the defeat (in this case I mean, 'Da Feet') of the parcel delivery person trampling your package after it's a week overdue, take heart. I thought it might be important to mention the following: I rarely find it necessary to write about the shipping container of any kit unless, of course, the pieces arrive in pieces. In the case of the *Rocky Jones Space Ranger XV/2 Orbit Jet* I find I must tip my hat to Gary Rocchio and the shipping department at scifimatters.com. You see, the box arrived looking like *Godzilla* had used it as a barstool. Completely crushed on one end, I thought for sure I would be doing a lot of cutting and pasting in order to get this rocket ready for the pages of *SFFM*. To my surprise there wasn't even a scratch. Securely wrapped in bubble plastic and surrounded by a cocoon of foam peanuts, the kit fared well even under the heavy handed, bone-crushing treatment it received by the parcel delivery woman. (Yes, and I am sure she moonlights as a wrestler with the *WWF*. *Ouch!*)

Phase One: Preparing the model

On to the *XV/2 Orbit Jet*. Although simplicity is the rule in building this kit, the finished product is nothing short of spectacular. Parked in the garage at only seven primary components (the rocketship), 4 brass rods,





8 plastic discs and 6 decals, the *Orbit Jet* was still a challenge. I found the single sheet of step by step instructions to be clearly written and easy to understand. Also, the simple exploded view of the rocket made construction a near snap. (See photos 1 and 2.)

The first step for any garage kit construction project is a trip to the kitchen sink, tub, or, as in my case (and to my wife's chagrin), the aluminum turkey pan. It is a good idea to get in the habit of washing the molded resin pieces of any garage kit in a mild solution of warm soapy water. The instructions ask you to use dishwashing liquid. I like to use plain, unscented liquid handsoap because it contains less surfactant than the dishwashing kind. It also won't leave a soapy film afterwards. Either one will suffice. Of course you should rinse your parts thoroughly in clean, lukewarm water and

allow them to air dry naturally. Another important habit to get into is wearing latex gloves to handle your model while it is being rinsed and especially after you have cleaned and dried it. Oily fingerprints on the model's surface can ruin the best efforts of even the most experienced painters. If for some reason you are susceptible to an allergic reaction to latex, as some people are, you can use the same clear plastic gloves that hair stylists use. They are available at most hair salons or drug stores.

Now that your model is pristine and sparkling clean, let's concentrate on preparing the landing fins. The *Orbit Jet* has four. They each need to have a $\frac{1}{8}$ " diameter hole drilled $\frac{3}{8}$ " deep into the center of each landing fin's pod. It is very important to drill directly into the center of each pod and twice as important to make sure you drill the hole straight into the fin. Also, watch the depth of your drilled hole. If you drill too deeply into one fin the model will invariably topple over—something *Rocky Jones* would never allow. If you are using a drill press it's easy to control alignment and drill depth. If you haven't got one here's a tip: Use a hand drill or *Dremel* tool and load the drill bit into the chuck allowing it to extend about 1". Next, place a locking wheel hub from an RC plane (available at most hobby stores) that has a $\frac{1}{8}$ " inside diameter around the bit. The hub has a small set screw that can be tightened around the drill bit $\frac{3}{8}$ " from the end. The locking hub will act as a stop. Clamping the fin in a vice with protective covers on the vice jaws (never over-tighten) and using a carpenter's square for alignment, you can drill very neat holes. The kit comes with four $\frac{1}{8}$ " brass rods that are glued into each pod. Before you install them it is best to sand or file the end of each one to ensure that they are flat. Glue each rod in place and double check to be sure that each one is protruding by the same amount from each pod. Allow plenty of time to dry as the entire model will rest on these rods.

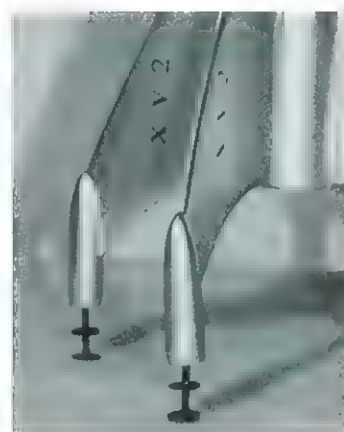
Also included in the kit are eight $\frac{3}{8}$ " round plastic disks. These are installed over the brass rods. In the TV show these acted as a kind of shock absorber for the 'real' *XV/2 Orbit Jet* spacecraft. Although the kit did not include any templates for alignment of

fins or disks, making one for each is easy. A few template tips: For the correct disk placement, cut a piece of cardboard $\frac{1}{2}$ " wide by 1" long and trace the disk on the edge. With a razor knife cut out two $\frac{1}{8}$ " wide slots by $\frac{1}{2}$ " long and $\frac{1}{8}$ " from the edge and $\frac{1}{8}$ " apart. Using the template as a guide, you can place each disk in the proper position with ease. As shown in the instruction sheet, one set of disks will be glued directly to the bottom of each rod. (See photo 3.)

Installing the landing fins may require a small amount of cosmetic sanding. I always recommend test fitting resin parts prior to gluing in place. In the case of the *Orbit Jet* very little sanding of the registration (mold) lines and flash was required. This was a very clean kit.

Once I performed my landing fin test fit I was ready for installation. As with any rocketship, fins that are askew will cause your finished model to look awkward, not to mention the fact that it will send your spaceship spiraling out of control into deep space. So another set of templates is required to insure proper alignment. First cut a 7" square piece of cardboard. Next inscribe a circle $6\frac{1}{2}$ " inches in diameter in the center. Now draw two lines 90° apart through the circle. Measure from the center out $3\frac{1}{4}$ " and make a mark on each line. Now draw a $\frac{3}{8}$ " diameter circle where you made your marks and cut the small circles out. Next I cut two 4" square pieces of cardboard and, in the center of both, cut out a $1\frac{3}{8}$ " circle. On one I cut four slots $\frac{1}{8}$ " wide by $\frac{1}{2}$ " long and 90° apart. On the second I cut two slots 180° apart. These will serve as the upper alignment template for the landing fins and the upper template for aligning the wings. Now you have templates that will locate each fin and wing in the correct position to the spaceship's fuselage. (Photo 4.)

Once the fins and wings were secured in place and dried, I added a small amount of filler putty to each seam. (Photo 5.) As I mentioned, this is a very clean kit. There was almost no evidence of mold registration lines so sanding the filler putty with wet-dry emery cloth was a snap. Once that was complete I gave my spaceship a good cleaning with a mild soapy solution and



allowed it to dry thoroughly. My *XV/2 Orbit Jet* was ready for painting.

Paint your Rocket

No self-respecting rocket scientist would be caught dead in a rocket painted any other color than silver. Before I could apply my metallic skin, however, some very important preparations were required. I first airbrushed a coat of gray, sandable primer. Once dry, I lightly wet sanded the entire ship with 1200 grit wet/dry emery cloth. I repeated this step three more times in order to build up a thin layer of primer. (See photo 6.) I waited 24 hours for the model to be completely dry before applying the finishing coats of metallic silver paint. I added three separate coats of silver paint and wet sanded the ship between each with very fine emery. Once the last coat was completely dry I buffed out the finish with a silk cloth. Before applying my decals and airbrushing a finish coat of clear acrylic I painted the landing pod disks and rods flat black.

The decals that came with the *Orbit Jet* are an exact replica of those used on the original ship from the TV show. Gary Rocchio did his homework on this one. I placed them as instructed and added my final clear coat. Now it was time to take a few steps back and admire this wonderful piece of sci-fi nostalgia. (Photo 7.) My *XV/2 Orbit Jet* was ready for its first interplanetary mission. So let's go all of you *Space Rangers*, off to the launch pad and... three, two, one... **Blast Off!**

The making of Foundation's Images 1999

Our annual look at the sophisticated worlds, wonders and hardware created by Hollywood's groundbreaking digital FX house.



“What’s Going Down in MojoWorld?” by mojo

Oakalie Doakalie, kidarinos! It's been another fantabulous year here at the place we like to call Foundation Imaging and your old pal Mojo is here to tell you all about what his little corner of the company has been up to.

Of course, the big news is **Phantom Menace**! I supervised 4,500 shots for the **Star Wars** blockbuster and my crack team of animators here did an absolutely stunning job—I commend them all! Unfortunately, George Lucas opted to not use any of our material, since most of the scenes contained the *Starship Voyager* and thus he felt they were not appropriate for **Star Wars**.

But **Paramount Pictures** were thrilled with our work and happily elected to purchase the shots for use on **Star Trek: Voyager**! The biggest obstacle of the season was having to remove *Jar-Jar* from all our final frames. However, after much sweat and toil, we have the process down to a science and were able to create a 'Jar-Jar Removal' plug in for **Adobe Photoshop/After Effects**. We have offered to run our filter on the original negative for **Phantom Menace** free of charge but are still waiting to hear back from **LucasFilm**.

In the meantime, perhaps I can say a few words about the big **Voyager** blockbuster, take-no-prisoners episode/TV-movie extravaganza, mind blowing

event, **Dark Frontier**. Ummm... it was cool! Oh, I said a *FEW* words... cool and awesome! Actually, the phrase that springs to mind is "Christmas is Futile", which is a new *Borg* phrase we encountered as we worked over the holiday season to get the big two hour episode finished.

Dark Frontier was originally scheduled as a two part episode, but during the post production phase it was decided to turn the shows into a single two hour

movie. This accelerated the entire schedule, resulting in your favorite special effects company having to spend the night before Christmas with lots of things stirring, especially mice!

The esteemed Robert 'Hoser' Bonchune III, Esq, was kind enough to take over the duties of supervising the first half, originally known as 'Part One' (this would be the opening hour of the program, or 'acts one and two' using secret industry jargon).

This mainly involved the *Borg Queen* sequence, a tasty morsel you can read about in his article, located elsewhere in this fine magazine.

Rob might also take credit for having the *Borg Unicomplex* built for his show, but it was seen mostly in mine and became something of a private hell for the entire staff so I'm going to be the one to talk about it! If, during the course of reading Mr. Bonchune's article, you come across any information regarding the *Unicomplex*, please tear it out and burn it.

Xpert model builder Koji Kuramura (aka 'Fred,' 'Magic



Koji' and 'Astro Boy') handled the formidable task of building the *Unicomplex*, based on a design by Dan 'The Man' Curry.

Currently walking into the office is Tareq Mirza, an animator who had nothing to do with this episode. For this reason and this reason alone, I am forced to ignore his incredible talent for the remainder of this article.

The *Unicomplex* was a very big model polygonwise (about 800,000) which means it is a very memory-intensive render. Since every scene containing the structure also featured *Borg* cubes, spheres and *Queen* ships, many of the shots had to be broken down into separate elements for final rendering (yes, folks, even 256 megs of RAM can run out when you're in *Borg* territory). In addition, every section of the massive space station not visible to the camera was removed on a shot-by-shot basis. In a few extreme cases, some scenes had the entire *Unicomplex* simply stuck on a polygon as a single image!

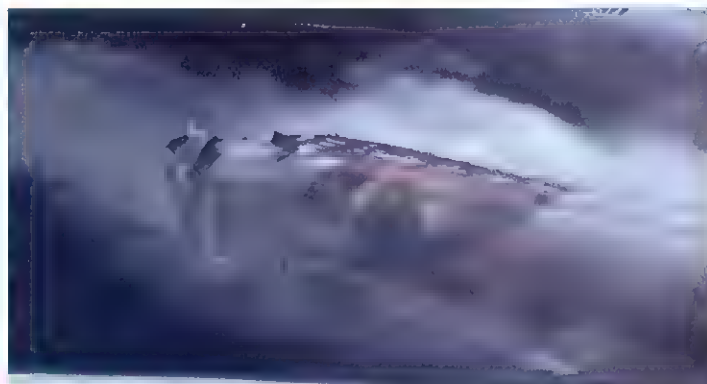
Speaking of the *Borg Queen Ship*, I'd like to take this opportunity to thank Chief *Star Trek* CGI Model Builder Extraordinaire Brandon 'Captain Happy' MacDougal for the excellent job he did in both building *AND* designing the newest *Borg* vessel. He worked his mouse fingers to the bone creating that ship, and I wish we had more than kind words and an endless fountain of cash with which to thank him.

Also of note this season was the opening sequence from *Relativity*, which featured a first-time look at *Star Trek's* fabled *Utopia Planitia Shipyards*. It was a moment every fan wanted to see: an expansive look at the *starship* construction yards in full swing. The shot originally called for nothing more than a nearly-completed *Voyager* in drydock, but the folks here at *Foundation* wanted to see the whole shebang so we ended up giving the producers much more than they asked for! Just call us *Mr. Nice Guy Imaging*.

In fact, the more I think about it, the more I realize there's enough material in those two shots to fill an entire article! If you'd like to see one, let the editors of this magazine know and I'll write it. So, now it's up to you!

"Crash Voyager on an Ice Planet and can you have that in two and half weeks?"—creating fifth season FX for *Star Trek: Voyager*

rob bonchune



Well, another season of *Voyager* has ended. Some of the highlights for me this past season were definitely the 100th anniversary episode *Timeless*, the DS9 finale *What You Leave Behind* and the two part *Borg* episode *Dark Frontier*.

Timeless was probably the most challenging and scary because it was my first episode as FX supervisor; a trial by fire for sure. The crash sequence was one of the most exciting and difficult things we have ever done for *Star Trek*. When they said, "crash the *Voyager* on an Ice Planet and can you have that in two and half weeks," we jumped up and said, "no problem!" Well, something close to that anyway. John Teska built

and textured the landscape superbly. Everybody at *Foundation* was involved at some level. It was a team up between compositing (Headed by Sherry Hitch) for the elements and *Lightwave* for the rest. All the snow plumes were live elements shot at *Foundation* by John Allardice using baking soda, air jets and green screens. All the rigs for the shoot were built under the supervision of the company's Jack Of All Trades, Jeff Luther—it was quite the ensemble!

While they were in the back shooting, the rest of us were setting up the shots. This included building the interior of the *warp nacelle*, setting up the elements and just plain getting the right motions. Lighting was definitely one of the trickiest parts to the sequence. A tip for you aspiring animators out there—keep things as simple as possible (there were no more than three or four lights in any scene). Lots of work also went into detailing the models, including adding damage the *Delta Flyer*, re-working the surfaces of the *Challenger* and building a beautiful Ice Planet.

Next up in my episode (I supervised *Part One of Dark Frontier*, Mojo supervised *Part Two*), was the *Borg Queen* sequence. The whole sequence was animated by John Teska and I was very impressed—I thought it looked real! I remember walking over to his screen and being blown away by the realism. All of his elements blended with the set beautifully—the piping, the hole in the floor, and the suit coming over were all CGI. We even fooled people at *Paramount*! Mitch Suskin (FX Supervisor, *Paramount*) said that when they were viewing our footage, people would say, "Hey, I didn't

know you guys did that practical!" That's the [best] compliment you can get.

Last but not least, we did the fire cave sequence for the final episode of *DS9*, *What You Leave Behind*. Given the short amount of time we had to complete the sequence, we decided to composite real fire elements instead of researching computer-generated fire. The cave was entirely CG, built by Brandon MacDougall and Koji Kuramura. Brandon did an excellent job blending the live action plate into the surrounding cave. The whole sequence was quite a challenge, but in the end we whole-heartedly enjoyed it. It was really one of those rare shows where the split was maybe 60-40 in favor of *AfterEffects* and not *LightWave*! Dan Curry, VFX Supervisor for all of *Star Trek*, worked closely with us every step of the way. This was the last show and he definitely wanted our best work. I thought the sequence looked great!

Although there were many other shows this season, those mentioned would be the ones with the most challenging and spectacular FX (although, there is that melting *Voyager* episode, but that's for another article!) It is always a pleasure working for *Star Trek*. They have very high production values which always forces us to rise to the occasion and do our best work. Everything on the show is done to film level quality and you just can't beat the feeling of seeing your stuff on TV every week. What a great job! ■



"Forty episodes of television unlike anything that has come before"

jeff scheetz

Foundation Imaging Project Supervisor, on the making of *Starship Troopers*

Unlike any project before it, *Starship Troopers* promises to be the next big thing in animated television. Taking only a few cues from Paul Verhoeven's movie and many more from Robert Heinlein's novel, Sony, along with Foundation Imaging and Flat Earth Productions, have embarked on forty episodes of television unlike anything that has come before it.

Traditionally, studios like Sony have a team of writers who create scripts, designers who create model sheets and teams of directors and artists who create storyboards. Then all the materials are sent to the far east where animators create the drawn frames. In a few weeks they get the footage back and start editing.

It was hoped that *Foundation* and *Flat Earth* could function like a 2D (hand drawn cartoon) animation production facility, and theoretically we should. But in practice it's a whole different thing. Below are some examples:

Staffing: In Korean production houses the staffs often work on a day rate and if there is no work they don't hire anyone. If there's tons of work, they bring in lots of artists just for the days they need them. Skilled

CGI artists in the United States are much harder to find and, once employed, look forward to long term employment with a company. At *Foundation*, we grew our staff from 40 to over 110. 40 additional *Lightwave* animators and 12 modelers were brought in to work on *Troopers*, as well as several coordinators and a support staff. *Flat Earth's* staff has also doubled in size.

It's safe to say that, between *Foundation Imaging* and *Flat Earth*, *Starship Troopers* employs at least a third of the top *Lightwave* artists in Hollywood. It took over three months to assemble this crew and we had to do it one person at a time.

Episode Schedules: Because 2D production companies can change the size of their staffs daily, it's not uncommon for them to have every episode in production at the same time. *Foundation* is scheduled to create twenty five episodes this season and *Flat Earth* will be creating fifteen. Because of the limited number of qualified artists, we work in four smaller groups of ten. Each team has roughly five weeks to complete twenty minutes of animation for a given episode. When we actually do that, I may write another article and tell you how.

Animation: Unlike 2D or most of the CGI before it, *Foundation Imaging* is relying extensively on motion capture. Generally animators consider themselves to be actors. They 'act' with a pencil or, in this case, a computer. Our animators are quickly learning that they are not actors on this show, they are directors. They must verbally instruct our motion capture

actor to give the type of performance that is needed for their scenes. Being able to direct talent to get what you want is a solid skill and not everyone can do it. It takes time and practice.

Currently *Foundation* has one magnetic motion capture suit and the actor must go through a scene several times to perform each character. It's much like filming a movie about twins and one person plays both twins. Or, in our case, he must play triplets or sextuplets! In the next few weeks we will be installing a much larger optical motion capture system. With the new system we can capture up to five performers at the same time. It will be up to our animators to block scenes and bring out performances from the entire cast.

All facial animation is still done by setting key frames, as are the bug's movements, vehicles, and special effects.

Modeling: This could be a entire article. In fact it is. See the accompanying article by *Foundation Imaging's* Modeling Supervisor Dave Adams.

Editing: 2D animation editors are accustomed to changing the timing on shots. They add and subtract frames all the time to make a shot play better. On *Troopers* all shots are rendered with motion blur and our motion captured performances keep all the characters in some sort of motion all the time. To simply duplicate a frame would just look wrong. Occasionally they will speed up or slow down the shots in editing and they can do that fairly undetected.

Although this experience is a very different process than 2D, it is working well. It's great to be working with a client who has solid story telling skills, a clear design sense, and creative vision that we can all share in realizing. At the time of this writing we have just finished our first episode—*Foundation Imaging* has twenty four more to go. Please wish us luck. ■

"Each week the Mobile Infantry visits a new planet to do battle with a wild assortment of malicious bug life."—3d Modeling for Starship Troopers

dave adams

Creating the expanded universe surrounding the new *Starship Troopers* series represents one of the largest undertakings of its kind in this industry. Created entirely through computer graphics this daily series will join only a handful of those already in existence.

Starship Troopers: Bug Wars will look sufficiently different from its predecessors to open a new chapter in CG FX work. Every effort is being made to come as close to photo-realism as possible. "In a daily CG series?" you ask. "A series for kids? Are they crazy?" you ask. Yes—we are.

The Challenge: The challenge of constructing a cast of a dozen regulars and thirty incidental characters, fleets of spacecraft, military vehicles, weaponry, and a new planet every week calls for a team of very talented and organized artists. I'm proud to be supervising this team, assembled from some of the best computer animators and modelers on the planet. It is a task that calls for long hours, high pressure and impossible deadlines. It doesn't hurt to be mildly insane as well. *Foundation's* modeling department for *Troopers*, located in an area dubbed *The Foundry*, consists of three teams;

The Character Assembly Team, responsible for the construction, surfacing, costuming and implementation of all the character and bug models.

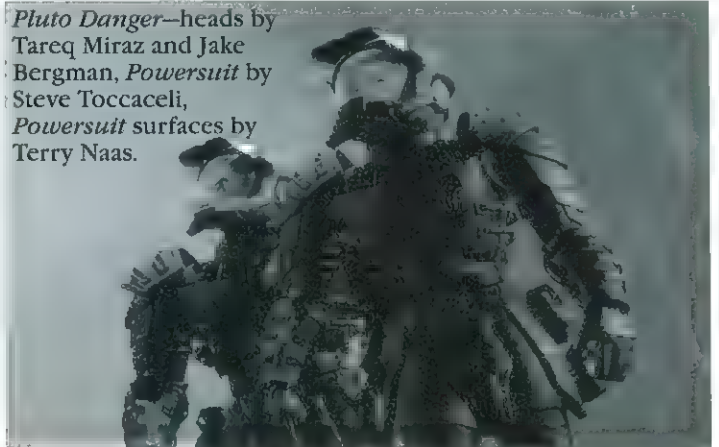
The Environment Team, responsible for creating the interior and exterior sets specified in the designs for the 'planet of the week'.

The Hardware Team, responsible for construction of all the weapons, vehicles and props associated with the show.

The modeling staff of eighteen artists work from designs supplied by *Sony Pictures*. We meet with character and hardware designers and discuss what will work best in translating the designs from the 2d to 3d worlds. We model primarily in *Lightwave 3d's Modeler*, and for some terrain work have also used *Bryce 4* and *Amorphium*.

CG Actors and Bugs: In the case of CG cast members, our *Character Team* artists rough out the individual head designs either by using a standard base 'cage' (a *Lightwave3d Metanurb* mesh built for proper scale) or by starting the head from scratch. Character heads are divided into *Main Cast* and *Incidental* categories. Cast members with a lot of screen time and close-up shots get extra attention. *Incidental*

Pluto Danger—heads by Tareq Miraz and Jake Bergman, Powersuit by Steve Toccaceli, Powersuit surfaces by Terry Naas.



and *Extra Characters* are developed only to the point necessary for the shots they appear in. When geometry for each head is approved in-house, they get surfaced (skin tones, aging, hair color and eyes) and a test image is rendered for *Sony's* approval. Upon approval, each character with dialogue in the show will have a series of *Morph Targets* created in *Modeler*. These 'targets' are controlled in *Layout* with *Morph Gizmo*, using the targets themselves and the incremental stages of morphing between each target to create *Phonemes*. This is how we create and control character mouths to form letter shapes and expressions. This is also the method used to control features of the face that indicate mood (eyebrows, nose, chin, cheekbones and the forehead). The software memorizes morph combinations we create using slider bars that move each part of the face from one morph target to another. The controls are equivalent to those used to move and record animatronic puppet expressions in practical FX work.

An animator synchronizes each line of dialogue in a scene by hand, usually with reference footage shot of themselves (performing the dialogue) as a guide.

The bodies of our characters are built separately from the heads and for the most part we use a standard neck size, allowing us to interchange heads with bodies as needed. Each body is set up with a bone structure and adapted to work with our

Motion Capture system. Usually we will construct an *Inverse Kinematics* version that can be completely hand animated for subtle character work.

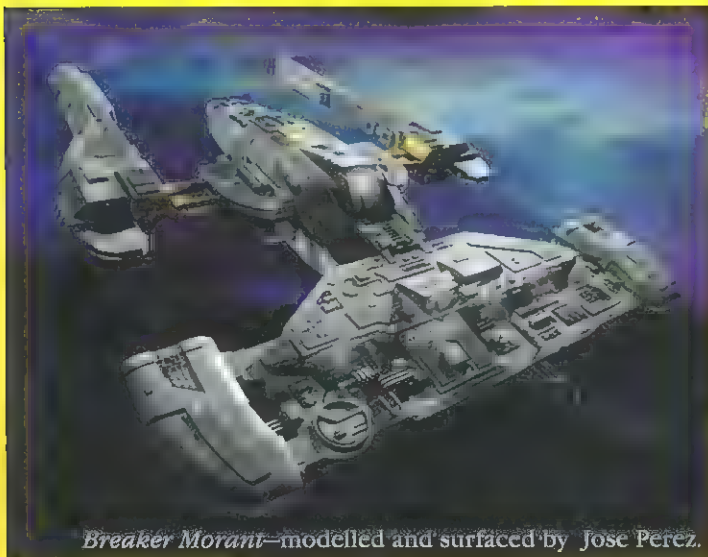
Because of the amount of gross movement (battles, running, jumping, climbing and falling) in an action series, *Motion Capture* technology is indispensable. This type of all-out CG extravaganza simply would not be possible without it.

Motion Capture is not an option, however, with the assorted (and just plain nasty) bugs that inhabit the *ST* Universe. Each bug model is designed by *Sony* and built by our Team to be hand-animated. Like the CG Actors, the *ST* bugs are modeled in *Lightwave Modeler*. Due to the bugs' organic nature, *Metanurbs* is an essential tool in the modeling process. With the accent on dangerous pointy barbs and slashing claws, these unfriendly fellows require expert modeling skills to realize. While the *Warrior Bug* designs follow what has come before (in the feature film), we've had the opportunity to expand the species a bit. New designs include long-legged *Stilt Warriors*, new flying bugs called *Ripplers*, dangerous little cave-dwelling pests called *Cliff Mites* and even a 2 mile long *Transport Bug* capable of shuttling thousands of bugs over land, in water and even through space!

In the case of *Warrior Bugs*, where shots call for hundreds at a time, several levels of bug



Rusty truck—modelled and surfaced by John McGinley.



Breaker Morant—modelled and surfaced by Jose Perez.

models are required; extremely low polygon count stand-in bugs (used for the actual animation plotting in order to speed up computer refresh rates), low poly working models (for the most distant section of a swarm), medium rez models (for medium shots) and 'Hero' models built specifically for close-up work.

Character models also come in four flavors, *Super-low*, *Low*, *Medium*, and *High Resolution*. With an average of six hundred shots per show our animators need the speed you gain by setting up shots with very low poly models. Some shots in our first episode called for twenty *Troopers* to scramble to their *Dropships*, and even *Pentium III 450s* and



Doc—head by Jake Bergman, image by Perry Naas.

500 Alphas groan under the weight of that many bones and polygons. In addition to ensuring that the character and creature models are visually ready for 'prime time', we have to model each object for maximum efficiency. It's not unusual to have scenes averaging in the 1 to 1.5 million polygon range.

The challenge faced by the *Character Team* is the conversion of comic book level character designs to 3 dimensional heads that must comfortably and credibly fit into a world of photo-real hardware. Modeling character heads is a meticulous, painstaking job and the surfacing involves painting accurate details down to the individual hairs and blemishes on each model. The *Character Team* at *Foundation Imaging* is the backbone of the show.

CG Environments: Each week the *Mobile Infantry* on *Starship Troopers* visits a new planet to do battle with a wild assortment of malicious bug life. Frigid ice worlds, water planets, jungle planets and desert environments spring from the drawing boards of *Sony* designers and *Foundation's Environment Team* brings them to life.

Each world presents a unique modeling challenge. Our first five story arc takes place on Pluto. Staging action on Pluto forces us to ignore certain scientific facts in order to serve the story. As a result the story does not take place in darkness, bugs don't instantly freeze and shatter before they take their first step and thin rubber *Powersuits* protect humans from the environment.

For Pluto the producer wanted a very craggy, Icelandic terrain

with patches of glacial ice and alien mountain peaks surrounding the action. A methane gas-like shroud was desired to let detail drop away toward the horizon, but not obscure the action taking place. The *Environment Team* modeled terrain specific to some scenes, large amounts of generic terrain and developed surface textures scaled to long, medium and close shots. Even with this sort of coverage, animators often spent time modifying terrain for their individual shots to get the exact look they wanted.

The 'Planet of the Week' requires Modeling to work closely with episode Technical Directors (TDs) who will light, arrange, surface-scale and add volumetric gas effects to the landscapes. This concerted effort brings the environment as close as possible to the designer's original vision for the planet while allowing for the special considerations CG Animation requires.

CG Hardware: The *Hardware Team* at *Foundation* handles the fleets of Spacecraft, Terrestrial Vehicles, Aerospace Vehicles, Buildings, Weapons and Hand Props. Speaking for myself only, it's the most fun you can have with your clothes on.

The designers at *Sony* have provided us with some lovely futuristic craft and armaments to build, but hardware is also where we have the most design latitude and input. Several key designs were done in-house and many designs were adapted to work with the characters and situations when unforeseen problems popped up. Often weapons and vehicles had to be modified or scaled to allow certain situations to work as the storyboard artists and

Doc Victorious—Doc head model by Jake Bergman, Powersuit by Steve Toccaceli, Powersuit surfaced by Roger Borelli, image by Steve Toccaceli.





directors envisioned them. It is not at all unusual to find doors or ramps appearing in vehicles where none previously existed. Rooms grow or shrink in scale depending on the action depicted between humans and bugs. Weapons suddenly develop new capabilities, or size themselves according to who wields them. A large part of the *Hardware Team's* job is adapting, retrofitting and re-thinking designs from the ground up.

The *Fleet Class* ships (represented in the film by the *Rodger Young*) have undergone a radically different design, *Ground Troop Vehicles* and *Construction Class Vehicles* have been added, and *Modular Troop Outposts* were designed and built to move from location to location. *Pulse Rifles*, *Grenade Launchers*, *Optic Rocket Launchers* and *Hand-held Nukes* are among the wide variety of new weaponry.

Mobile Infantry Powersuits (the cast's body armor) were designed for day to day battle with swarms of bugs, but Heinlein fans will be happy to know that the *Armored Battle Suits* are back! The *Ape Suit* and *Marauder Duck* are large powered ground suits that put *Mobile Infantry* Men and Women on an equal footing with a *Warrior Bug*—great for hand-to-claw combat!

These suits represented a tough hurdle initially. Building a fully articulated character in body armor is difficult enough. The *Powersuit* armor has to be built in such a way as to let flaps, shoulder-pads, and protective gear be manipulated separate from the main body to prevent them from intersecting with the body geometry itself. Special software plug-ins are applied to the various

parts of a suit to ensure they flex with, and stay out of the way of, arms and legs. Each *Powersuit* has to be modeled then 'exploded' so that *Bones* can be added to each piece of the armor. 'Exploding' simply involves moving each piece of the suit geometry away from its neighboring piece, so that the bones can be applied without influencing other parts nearby. Once the suit is 'boned' the suit is collapsed back into its original position. The plug-in software is applied to control the armor and all that has to fit and function within a mechanical *Ape* or *Duck* suit. After several trial runs and refits, we finally developed a way to make it all work without crashing the render farm each time a scene renders.

The 'Hardware Star' of the show has to be the *Valley Forge*, a 1300ft long spaceship that houses five *Drop Ships*, a *Retrieval Ship*, a 500ft *Cargo craft*, *Aerospace Fighters*, *Ground Assault* and *Troop Vehicles*, modular construction equipment and building parts, and enough troopers and weaponry to eradicate any planet-wide bug infestation.

Like most of our models the *Valley Forge* comes in low, medium and high rez versions. There are hero versions for close-up work like the *Drop Ship Hangar* door section that ships emerge to space through. A special section was constructed to let us fly from outer space directly into the bridge of the ship.

Fleet shots are accomplished using stand-in quality ships in the extreme background, medium rez ships in the middle and high rez models closest to camera. The team TDs add

engine effects, weapon fire, bug plasma bursts and explosions.

The box-shaped *Dropships* are gone in favor of a sleek new design reminiscent of the dropship from *Aliens*. Both it and the new *Retrieval Ships* have engines mounted on foldout wings, launch from space and have full terrestrial maneuvering capabilities.

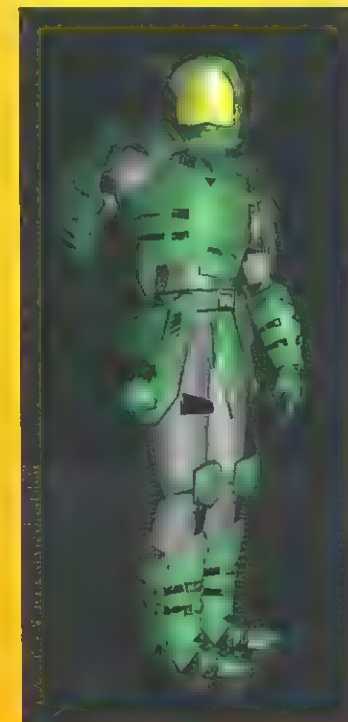
As the *Mobile Infantry* moves planet to planet they unleash a seemingly limitless variety of vehicles especially suited to each environment. Who'd expect them to have a fleet of personal jet-skis that free-fall from thirty meters above the surface of the water planet *Hydora*, or fan-powered *Hovercrafts* standing at the ready?

Just how big is the hold of the *Valley Forge*? It's as big as the imagination it takes to create everything within it!

Bug Wars: Starship Troopers: *Bug Wars* may be the most ambitious all-CG TV series ever mounted. All the principles involved, *Foundation Imaging*, *Flat Earth Productions* and *Sony Pictures* are aiming for high production values and a level of realism that is groundbreaking in series CG FX. If the camera tracks past an ammo case that should be banged up, rest assured that an FI or FE modeler has painted every scratch and paint chip you see. If a truck used in the show has been sitting around in disrepair, expect to see rust and decay. The vehicles and weapons will look real, the bugs will scare your pants off, the alien planets will give you the creeps and the characters will engage you. You'll forget you're watching computer graphics and root for *Rico* when he saves *Carmen*; you'll feel your heart pounding in your chest as you race with *Dizzy* across rock strewn Pluto, chased by a pack of *Warrior Bugs* with bad attitudes. You'll wince as an automated rock-drilling piton is used to bore into a *Cliff Mite's* head (Yuck!).

If we've done our jobs here in *Foundation Imaging's Model Department*, visual credibility will never get in the way of your involvement with the story, situations and characters. That's our goal here, to make a show even we can lose ourselves in for thirty minutes—and have cool toys on our desks that we had a

hand in designing, building and bringing to life.



Foundation Imaging—
Character Team: Tom McDougall (Team Leader), Roger Borelli, Ken Brilliant, Doug Drexler, Brad Grace, Tareq Mirza, Rich Suchy, and Steve Tocacelli
Environment Team: Yousy Lee (Team Leader), Billy Jebens, Randy Sharp, and Eric Riel
Hardware Team: Errol Blamier, John McGinley, Jose Perez, Kyle Toucher, Aaron Vest, and Andy Wilkoff
 Department Supervisor: Dave Adams (a.k.a. 'Lightwave Dave')



Issue 3.
Last in Space kits.
Battlestar by Dave Sisson.
Adrian Bruce's How-to series.
Sequester kits: Better bases.
Animas: an introduction.
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Issue 12.
Cyborg: Neil Gorton.
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Bill Pearson's crash miniatures.
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Storyboard artist Jim Cornish.
Bob Gould's Penguin.
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Ent's Han Solo kit.
Ent's Enterprise-B.
Voyager kit.



Issue 15.
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Scratchbuilt Ackbar.
Steve Begg - conclusion.
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Garrison - starship kit.
Lighting models - part one.
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Bladerunner Blaster. Gaster review. Spinners: PDI - 15 years of CGI excellence.



Issue 24.
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Mark Walker's animatronics.
Spacecraft/vehicle design pt. 3.
CGI course part 4.
1:1 Hammerhead.
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The Probe.



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J5 Preview.
Lunar Models.
FX sculptor Julian Murray.
XLS Pt. 3.



Issue 27.
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Starship Troopers pt. 2.
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CGI course pt. 7.
Steve Begg, concept artist.
Scratchbuilt Sandman Blaster.
Reviews: Glencoe's RM1, CD Hood, Iron Maiden's Eddie.

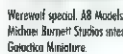
Am/Ent's twin TIEs, AB models' T81
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Lights: Frankie Fliver, Glencoe
Reviews: PPK Band, Power
Lights: Frankie Fliver, Glencoe
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Polar Lights' L.I.S. Robot and
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Cruiser and Hopper miniatures.

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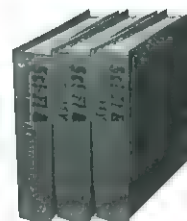
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Nydenion

Get Ready for a New World

Jack Moik

Working weekends, Jack Moik and his dedicated German team are busy creating an ambitious science fiction movie, filmed on a shoestring budget yet incorporating spectacular special effects sequences, extensive large-scale model work, live action sets and CGI. Jack intends to prove to the German film industry that science fiction with Hollywood-style effects can be produced economically in Europe for a worldwide audience hungry for the genre. In this special report Jack chronicles his work thus far and introduces readers to the intricate traditional and CG models, live action sets and locations that make up the exotic world of Nydenion.

When I was ten years old my mother gave me some money to see a movie called *Star Wars*. From that day on I knew what I wanted to do in life. No, it's not quite what you might think... I wanted to build *spaceship models*.

Film making was a consequence of my model making over the years. It bothered me to see my

models gathering dust on the shelves, so I took my grandmother's 8mm camera and shot my first effects scenes in our loft, which I almost set on fire, because I wanted the models to be destroyed large-scale too!

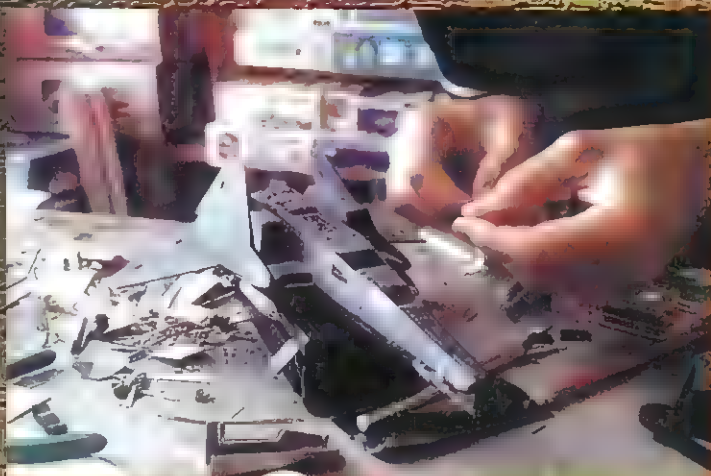
Eight years later I drove with some friends over a beautiful country road, collecting ideas for a science fiction adventure

called *Nydenion*. This would be a classic action adventure inspired in set and model design mainly by Ridley Scott's *Alien* and *Blade Runner*, James Cameron's *Aliens* and George Lucas' *Star Wars* trilogy—everything we loved in Sci-Fi.

In the summer of '94 I revised my old script and added a few new scenes. We then went

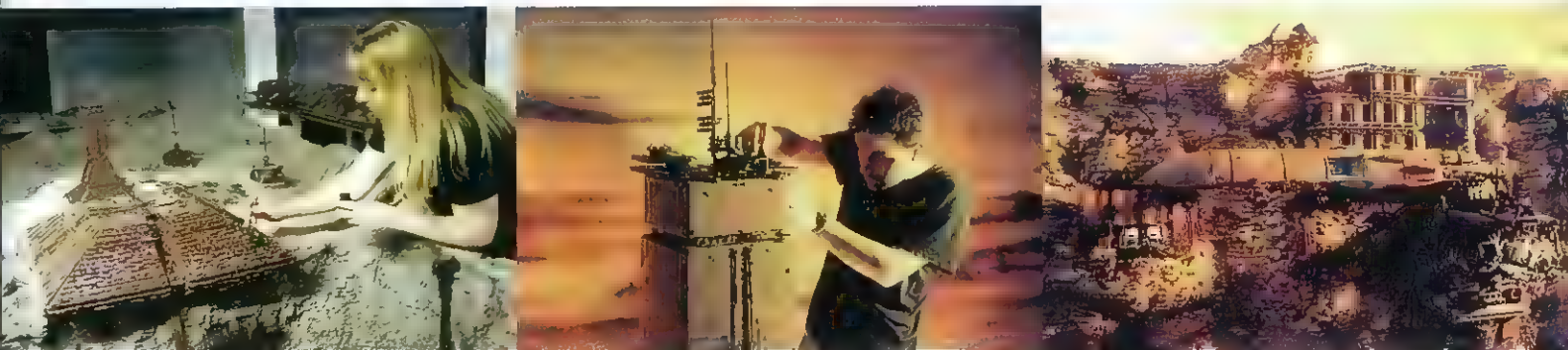
looking for an old factory or warehouse that could provide the room we needed for our sets and FX work. We finally found a building with an empty basement. Fortunately, since we would have to finance the whole project ourselves, it was very cheap to rent. Science fiction is still a strange genre to many German producers and film makers and we wanted to show everyone how you could achieve Hollywood-style FX on a very low budget.

I drew a few storyboards, blueprints and production paintings so we could begin our work. We didn't have the time pressure of a studio production and all of our crewmembers had 'normal' daily work to do, meaning we could only work on the film in our spare time. We therefore did much of our filming and modelbuilding at weekends and things slowly progressed.





Left to right: an early film test—ruins and wrecks were dressed with debris by modeller Alexander Roeder; Marcos Koutelas, Jack Moik and Alexander Roeder at work on the almost finished canyon set; Marcos Koutelas fixes the freighter *Yuma* to a docking clamp.



Left to right: model painter Barbara Zinow adds 'battle damage' to the near complete mining complex miniature; Alexander Roeder makes minor adjustments to the landing pad of this office tower miniature; the *I.S.S. Tavares* docked at a refuelling station.



Left to right: a large hangar for mid-size ships is located under the mining complex; live action spacefighter shoot in progress in front of blue screen; Mario Lottes displays a typical *Sycon* soldier uniform complete with a *M77* plasma rifle.

Opposite page: 12"
TC-85 Crusader,
Jack Moik makes
running repairs to
the *Battlecruiser*
Spearhead. The
basic design will
be used on the
larger scale
Tucana miniature;
fiber-optic
illuminated
cockpit of the 1:35
Sycon Fighter,
near
completed full
scale *TC-85*
Crusader cockpit
undergoes
lighting test.



Above: the 'canyon-crew.' Right: 1:35 *Sycon Fighter*.



As of this writing we have completed nearly 60% of our model work and are looking forward to finishing the project next year. Because of our financial limitations we are shooting entirely on video using DV and DVCAM. This, however, gives us the ability to check the film material immediately and we can also capture the effect sequences on hard disk for optical post production. New technologies like CGI, digital rotoscoping and digital compositing have also made a big impact on our work and made some things possible that we would never have dreamt of a few years ago. We have been able to create a whole universe—not bad for half a dozen enthusiastic film makers.

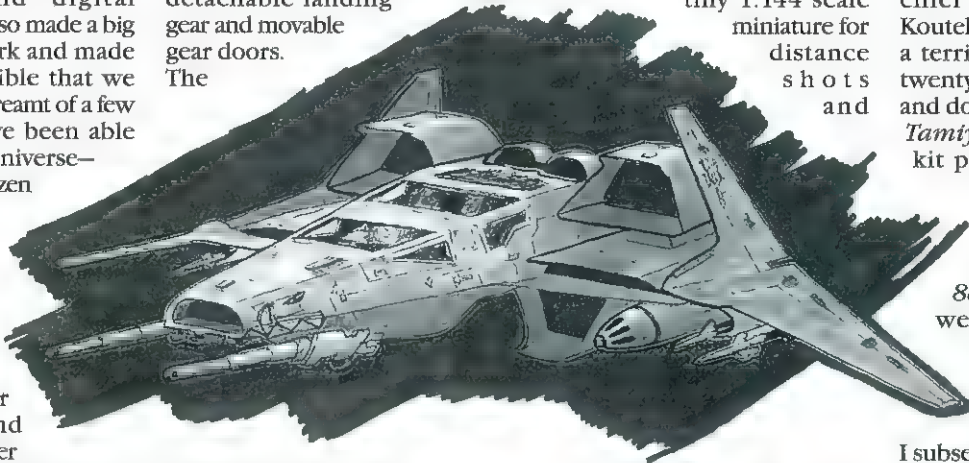
Our story takes place in the 24th century when humans have settled on other planets far beyond our solar system. After a long period of terrible war both planetside and in space, a dark conspiracy threatens peace negotiations between the two major parties in the story, the *Sycons* and the *Confederation*. The main characters are *Rick Walker*, a bounty hunter, played by myself and *Cynthia Perkins*, a female *Sycon* ambassador with knowledge of the conspiracy, played by my wife Annette. *Walker's* task is to take her to the spacecruiser *Tucana* where peace negotiations between the two major parties will take place. But their ship is shot down by fighters of their own fleet, led by *Admiral Nathan Galagher*, an evil maniac without any scruples. *Walker* and *Perkins* find themselves in a race against time to save their universe.

All supporting characters are played by members of our crew so we don't need to worry about time schedules and professional actors' fees and are free to insert days of shooting into our model and set building work.

The main vessel in the story is *Walker's* ship, the *TC-85 Crusader*, an old but elegant space fighter equipped by its owner with the latest in computer and weapons technology. For many years the *TC-85* was the workhorse of the *Sycon* space fleet, but smaller and more efficient fighters have taken its place. I built the model in two scales—a two foot, 1:32 hero

model for beauty shots, closeups and in-camera effects and a smaller scale 1:72 for distance shots.

Both models were scratchbuilt from polystyrol detailed with kit parts. They are lit with ultrabright red LEDs for the engines and fibre optics for the cockpit interiors. The hero model is equipped with a mounting device for bluescreen photography. It also has detachable landing gear and movable gear doors. The



gear features a suspension system and is made of small aluminium cylinders.

I wanted a scraped-off, rusty look for the paint, giving the ship the look of having been in service many years and never having had a 'respray'. I came up with the idea of first giving it a base coat in silver. After the drying process I covered parts of the model with liquid latex in areas that would be heavily stressed, such as the canopy mechanics or the edges of the gear doors and flaps. Then I applied the final paint job in overall dark blue with light grey edges. Some panels in different shades of grey and blue were added to give the feeling of replaced parts of the ship's hull. After drying I removed the latex carefully and finally got the look I wanted. It was such a complex and time consuming model (the painting alone took more than two weeks) that I could fill a whole article with it, but it was worth the effort and I learned a lot of new painting techniques.

The *Crusader* tended to be everyone's favourite vessel—perhaps because of its unusual blue colouring. Space ships and fighters in movies tend to come only in variations of grey but I wanted this one to reflect its owner's individuality. (An initial idea to paint it dark green was dropped because of the

resemblance to modern military aircraft.)

A detailed CGI model with textures from the hero model was made by CGI modeler Michael Welter to enable complex action flight sequences without the need for motion control photography. Our Line Producer and my right hand Alexander Roeder (also a good set designer, camera operator and model builder) built a tiny 1:144 scale miniature for distance shots and

loved the idea of a canyon with laser-carved rocks and huge buildings in it so we made a thirty foot basic frame from plywood and styrofoam. The rock formations were carefully made from five hundred pounds of plaster—a time consuming and painful job. We used knives and other sharp tools to give the surface a typical sediment look. After drying we scraped the rocks with wire brushes to obtain a weathered effect. Our chief rock sculptor Marcos Koutelas and his small crew did a terrific job. We built nearly twenty buildings, refill stations and docking ports mostly from *Tamiya* tank and *AMT Sci-Fi* kit parts—even a *Battlestar Galactica* and *Star Trek Maquis* fighter kit were used. *Hasegawa's Thor Moerser* and the German *88 Flak* gun from *Tamiya* were also often used for detailing. I'd noticed the kit boxes when studying the *ILM-The Art of Special Effects* book.

I subsequently bought some for myself and found out how great these kits are for kit-bashing. For small and fragile frameworks we used parts from miniatures manufactured by *Kibri*, a German company that makes very finely detailed HO train accessories such as cranes, heavy trucks and oil refineries.

With these parts we were able to give the buildings a convincing industrial look with large docking clamps for freighters and battleships, communication arrays and lighting booms. These fragile structures force us, when visiting our canyon, to move very carefully. Anyone who does not had better have some cement handy!

After a paint job with rusty red (*Sycons* give a damn for color), we drilled over 10,000 windows—and crashed both of our tiny drills. For lighting effects we placed blue, heat resistant foil behind the windows and added small red LEDs on the outer points as collision warning signs. After fitting them into the rock, we fixed small neon tubes behind. For some windows we used fibre optics—five hundred feet of them.

For dirtying down I prefer the washing method which means the whole model has to be airbrushed with a fine layer of black paint. After a few minutes you have to wash the black

a very large 1:16 model out of fragile materials for the destruction sequence. Thanks to CGI I think we'll never need them. For an expansive crash sequence of the ship, however, we will have to build large scale (1:16) low detailed and high solid versions as well.

At the beginning of the story *Walker's* orders lead him to a harsh *Sycon* planet called *Adcalmahr*, just a giant rock in space, really. For planetary defence reasons a large battle cruiser, the *I.S.S. Spearhead*, is on patrol flight in orbit of *Adcalmahr*. This four foot model in 1:700 scale was mostly built from polystyrol sheet over a wooden frame. It is detailed with parts from an *Airfix Saturn V* rocket, a *Revell Space Shuttle Orbiter* and more than twenty different ship and tank kits from *Matchbox* and *Revell*. It is equipped with a mounting device on both sides and at the bottom.

Only useful for *Sycon* mineral and ore needs *Adcalmahr* accommodates some mining colonies and military bases. To show this we had to build a large canyon miniature. Digital Video is not as sharp and detail sensitive as 35 mm, so we decided to make the miniature in 1:500 scale to get a wider vista. The canyon reaches a height of three feet, which is probably enough for a movie of this scale. We

down with *Revell* brush cleaner or color mix, again using the airbrush. The result is a weatherbeaten look with very fine soiling. Be sure to wear a filter mask—the smell is horrible and it's toxic, too. It looks terrific, however—almost real—and the effect can be produced very quickly.

On a seven foot square plateau high over the canyon stands the main complex, a pyramid-shaped building sporting dozens of landing pads. This is mainly made from polystyrol, detailed with parts from over thirty *Matchbox* and *Revell* kits—mostly tank and ship models. The lighting was also created with fibre optics, mounted to over eight thousand portholes.

Behind the complex rises the office tower, the highest building on the set. For closeup shots we built the upper section in 1:72 scale, which makes it four feet tall. It features a lit and movable elevator and detailed offices with tiny figures in them. We also equipped it with a detailed landing platform on the roof. We have three shuttles in 1:72 that we use on platforms and in hangar scenes in the same scale. They have no name or classification, we just call them standard shuttles. Our CGI modeler Thorsten Held also built two different CGI shuttles which were multiplied to represent air traffic in and over the canyon.

To make the scenes more impressive, however, we needed large spaceships connected to the docking ports. We therefore built some very finely detailed space ships to match our buildings in 1:500 scale. We have a one foot tanker, the *I.S.S. Shadiac*, and a one foot freighter, the *I.S.S. Yuma* (know where that name comes from?). Both vessels feature an identical bow, which I call 'Sycon Supply Vessel Standard Nose'. This is basically the front body of an *AMT Speeder Bike* kit (a little clue to the question above). I thought it was logical for the *Sycon* supply fleet to use the same kind of bridge and engine unit and just dock individual containers or fluid tanks onto it. Then we got the *I.S.S. Atrivis*, a midsize battlecruiser whose body was made from two *Airfix 2001 Shuttle Orbiters*, the *I.S.S. Tavares*, a one-foot fighter transport equipped with a detailed landing

bay, and some other small ships which don't even have a name. Most of our tankers, freighters and midsize battleships have the same small lateral wings which give the bulky hull a more elegant, aircraft-like look. On the stern, the freighters and tankers have a large plasma gun for defence reasons. The larger battleships feature the same typical double bridge. This helps make them a bit more interesting and you also get the impression that they came out of the same shipyard. In keeping with most specialeffect movies, we integrated some 'in-jokes' into our miniatures, such as the legendary pin-up poster on the bridge of *Star Wars*' rebel blockade runner. Many of our ships feature an anchor on the bow or lifeboats built onto them, but these are often so tiny and integrated into the general details that you have to take a very close look to recognize them.

We liked the idea of showing these capital ships floating through the canyon, only able to fly because of their anti-gravitation generators. I have always enjoyed Sci-Fi art by painters like Chris Foss or Peter Elson, where you see gigantic spaceships hanging in the sky like blimps. Our models are equipped with a mounting device on each side, so we can attach them to the docking clamps. They also incorporate

generate those heavy deformations caused by laser guns and thermo bombs. It may make some model builders' hair stand on end at the idea of burning holes in their models, but this was a lot of fun and I just can't wait to create all the wrecks and debris we need for our title sequence and the space battle scenes.

For closeup shots of the *Crusader* taking off and landing we built a 1:32 scale landing platform to fit the hero model. Alexander Roeder built several background buildings and cityscapes for the landing sequence and actor composites. These were mostly built from large plastic boxes and containers dressed with some large kit parts. To make them look more interesting he added large plasma gun turrets and radar dishes. We filmed them greenscreen for later compositing or in-camera for landing and take offs where we suspended the fighter with fishing line.

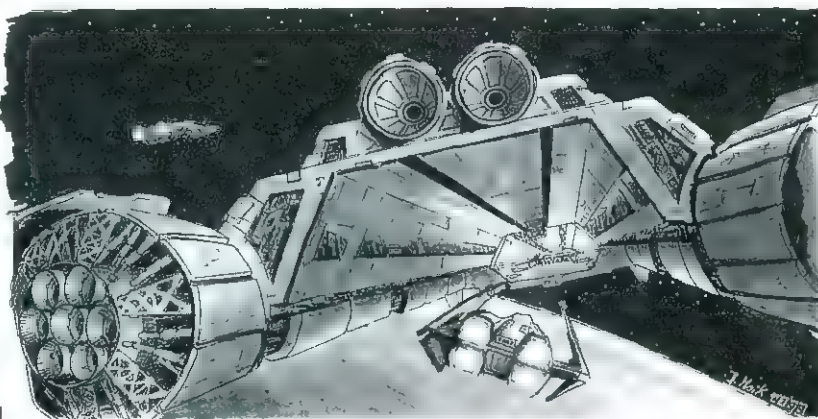
Live action shots of the fighter were accomplished with a full size cockpit and sections of the side hull and stern of the ship. We made these basically from plywood and very lightweight fibre material because the set had to be transported to the film location.

The full size cockpit of the *Crusader* was also used for the

and full scale ship exteriors. The most important thing was to make the cockpit look believable, so every switch and button lights an LED or display and we also added many physical gimmicks such as motorized panels and a movable canopy. I wanted the fighters to be controlled by a sidestick, because this is a familiar feature to viewers and I think it works better in action scenes than those *Trek*-like backlit controls. We therefore converted an old computer joystick, adding switches and LEDs. For filming we put the cockpit in front of our bluescreen so that we could later composite any kind of background we wanted.

For the *Sycon* enemy fighters I built a 1:72 scale maquette to check its proportions, followed by a one foot, 1:35 scale, fine detailed model. This was built very quickly in only two weeks due to its straight form and lack of extras such as gear and other moving parts. Some years ago I built a ...let's call it a *prototype* ...of the *Sycon* fighter. It looks fine from above, but from the side its very stocky and maybe a little ugly. We liked its basic shape, however, so I redesigned it, making it flatter and a bit more streamlined and it worked out very well. I was impressed by those low tech scenes in *The Right Stuff* where they mostly filmed their models outdoors 'flying' on wires. I therefore integrated two small aluminium tubes from the bow to the stern, as I did on most of the small models. Now we have the ability to fly them on wires too (but we won't throw them from the roof, like they did in 1983). CG modeler Michael Welter built a detailed CGI model using textures from the hero model.

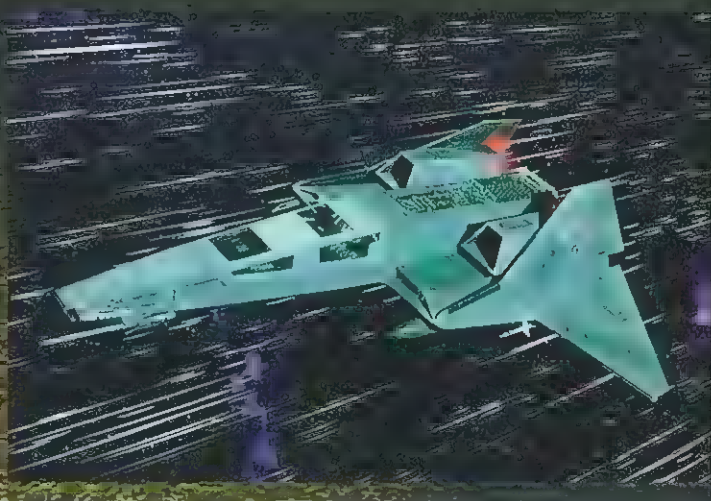
With these we are able to do complex space battle scenes. Although we always prefer model work over computer generated imagery, due to our background of favourite, old-fashioned effect movies as cited earlier, we *do* appreciate the possibilities of digital media. Thanks to digital technology we are able to do process photography without an optical printer, which would be way out of our financial league, as would a motion control camera system.



twelve volt lighting with LEDs and position strobos.

In the script *Walker* arrives at the base three days after a heavy attack. We therefore had to show battle damage on some buildings and ships. I took a soldering iron and braised big holes into the plastic of some models. Then I built small sections and levels out of finely detailed battleship kit parts. After putting these into the models, I took the soldering iron again to

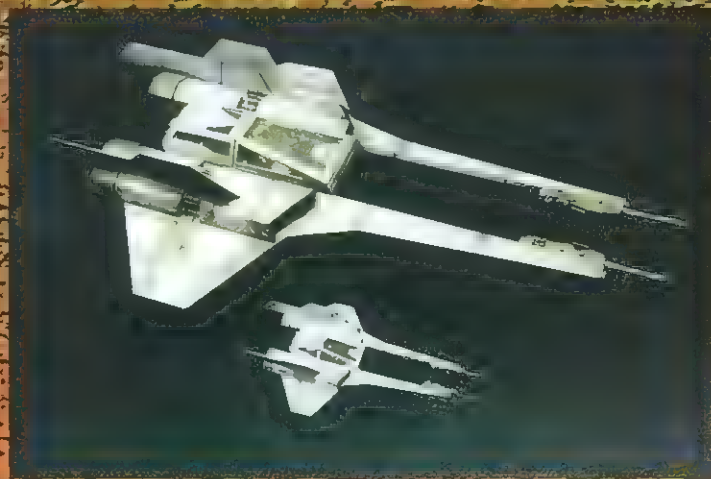
Sycon enemy fighters later in the movie, so we didn't have to build another mock-up. The conversion required minimal modernisations, for the *Crusader* cockpit looks much older and more improvised. Both designs are influenced by modern jet fighter cockpits with many LEDs, backlit panels and lighted switches. A car mechanic gave us some seats that we modified into a Floyd and Bowman (!) ejection system and also some car dashboards which worked out great as wall panels



Two shots of the *TC-85 Crusader*.



Two shots of space fighter pilots with blue screen imagery dropped into the background.



Left: Mining complex, spaceships and live action are comped together. Right: 1:72 and 1:35 scale *Sycon Fighters*.

Some extra-terrestrial backgrounds as settings for action were also needed. These were computer generated in *Electric Image* and *3D Studio Max*. For some scenes we also used *Cinema 4D* or *Truespace*, but their render leaves images too sharp and clean, so we had to add grain and video noise in compositing

to make them compatible with the model scenes. Many CG planets and objects were built by our CG Modeler Andreas Haun. Asteroids and space junk, plus some spaceship wrecks, we built as actual models. The main space battle sequence takes place in a space junkyard, but we still haven't completed this because of its

complexity. For some in-camera scenes we also have a (physical) starfield which measures 7 x 4 feet—a large box with neon tubes inside it and a plexiglas front with thousands of hand drilled holes.

Besides the large amount of model work we have also had to

create many weapons, props and costumes. We have designed and built rifles, scanners, communicators, message tablets, headsets, and binoculars for more than twenty actors. The laser rifles, for instance, were made from metal sheet and plastic profiles so they have the weight of a real rifle and the actors

don't handle them like toys. The basic gun under the cover is a 9mm Colt Government gas pistol that was carefully integrated to leave it fully functional. It turned out that we had to create muzzle flashes later via digital rotoscoping, which wasn't too bad, because we also needed to insert energy bolts. The guns look so convincing that we've needed approval of the police department on every location shooting.

One of those gun battle scenes featuring a great deal of laser fire takes place at a *Sycon* outpost on the planet *Nydenion*, where *Perkins* and *Walker* crash their ship. We filmed on location at a power plant and some old tank bunkers on the outskirts of town. The shooting, although very exhausting, was an exciting experience for the whole cast and crew. I remember Alexander as Assistant Director often shouting: "O.K. that take was fine. Let's do it again!" Or Steffan, the guy who played a shuttle pilot, needing more than twenty takes because he stumbled over the same words over and over again and everybody on the set couldn't stop laughing.

We also gained some experience with special makeup effects, because during the shootout *Perkins'* neck is hit by an energy bolt and at this point viewers and *Walker* realise she is a cyborg. I built a very thin electronic device with flashing micro LEDs, cables, resistors and some ICs. Then I made a small cover out of thin latex foam, cut a big hole in it and glued the electronic device behind it. We fixed that thin part with a skin adhesive to her neck and covered the edges with some latex and make-up, so you get the impression of damage on artificial skin. Later, in post production, we added some sparks and small electrical arcs.

We even did some location shooting on our holiday vacation to the island of Lanzarote. I had seen it in *Enemy Mine*, where they filmed those wonderful

rock and volcano landscapes. Later, we shot here in Germany in deep forest. This is a great geographical contrast, but fits in wonderfully with our idea of a terraformed planet where something has gone wrong.

For the wide shot of the outpost we need to build a model in 1:72 scale with surrounding tree-covered hills. On the top of the bunker is a large landing platform where a *Sycon Delta shuttle* is parked. I designed the shuttle with all the features I ever wanted to see in a spacecraft. It is very streamlined but has many hidden gun turrets and rocket launchers which can be extended when necessary. It has a three seat cockpit and captain's quarters at the stern. The wings swivel vertically for landing and there is a small cargo bay in the main body which houses an exploration vehicle. Both models will be constructed soon and—hopefully—finished this year. We also need a CG version of the shuttle, which logically can be build only after the physical model, because of the needed textures.

For live action scenes with the actors we have to build a full size cockpit and airlock. The cockpit is equipped with backlit displays, because they are quick and easy to construct, but for some functions such as main power engines or flight control we will also use buttons, switches and a joystick. We've obtained some small television sets for use as video monitors showing tactical computer graphics. These displays were supplied by our best boy and computer graphic animator Andreas Sebald, who created some great stuff you just wouldn't believe on his old *Amiga* computers! The shuttle cockpit and airlock are still under construction but will hopefully be completed this year so we can throw a New Year's party in it—kind of...

One of the biggest models of the movie, the large *Sycon* battleship *Tucana*, has also to be built soon. This is a bigger version of the cruiser *Spearhead* from the beginning of the movie. Inspired by a WW2 aircraft carrier it has a large landing bay at the bottom of the hull. It will be built in 1:500 scale so will be nearly five feet in length. We want to make a lightweight aluminium frame with five mounting points for bluescreen photography. The lighting will be done entirely by fibre optics with a neon tube as a light source, so we can light the hangar with the same neon light. For a landing sequence, a more detailed version of the hangar will be built in 1:72 scale. We have many spaceships, fighters and shuttles in that scale, so we don't need to make new ones to get the impression of a busy flight deck.

To be honest, the original space battleship named *Tucana* was dropped in mid-construction. The design was too similar in appearance to *Empire's rebel medical frigate*, due to its first construction plans being drawn up in the early eighties under heavy theatrical influence! The present design fits much better into the *Nydenion* universe and the *Sycon* fleet.

For interior scenes with the actors we have built some engine deck corridors, an air shaft and sections of a reactor room that we will also extend with a model. All scenes will be filmed on a fogged stage with subdued light to get this kind of *Nostromo* feeling we all like.

More than half of the live action shooting is completed and will probably be finished by the end of 1999. The movie will hopefully be completed in 2001, after a year of post production

which will include many CGI scenes, editing, sound effects and a score. Postings on the internet and press coverage have given us a big push, because the feed back is really good and some professional post production companies in Germany who like the project want to provide us with some FX work, editing and sound design just for the credits! For the future we hope to possibly produce a 35mm version of the movie with a professional cast and crew—after we've convinced investors that Sci-Fi is a genre that could be realized in Europe.

All in all, the production of *Nydenion* is a project which offers lots of entertainment and practice for me and my small crew. It never gets tedious, because we have to handle so many different jobs all by ourselves. We also have to make important decisions similar to those taken with big projects, such as copyrighting the script and design, making shooting schedules and archiving the video tapes. Paired with the experience in my job as a designer and model builder in a German effects film studio in Frankfurt, I decided to establish my own company. It is called the *FX Factory* and will be located in Wiesbaden near Frankfurt.

We offer all kinds of traditional effects work including conceptual design, storyboarding and props, model building and matte painting, plus digital effects and some specials like soundtrack and video editing. With these services, we would like to help in making German and European movies and TV productions a bit more competitive in the international market and add a little of our creativity to a genre that has made a huge impact on us all.

Visit us on our homepage at: <http://www.nydenion.de>

The 'Canyon Crew'

Jack Moik	Director
Alexander Roeder	Line Producer
Marcos Koutelas	Supervising Sculptor
Jan Hank	Sculptor
Jens Hank	Sculptor
Andreas Haun	Sculptor
Daniel Katzer	Sculptor
Simon Rieb	Sculptor
Liane Steinke	Sculptor
Frank Landwehrmann	Model Electronics

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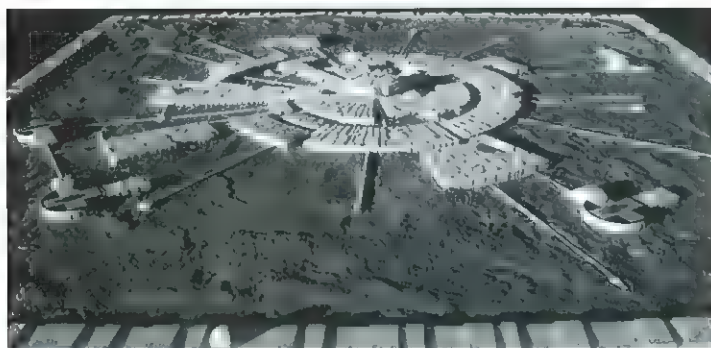
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TRADE ENQUIRIES WELCOME

More Pads; More Power

simon roykirk reviews E. James Small's Alpha Moonbase and Eagle booster garage kits

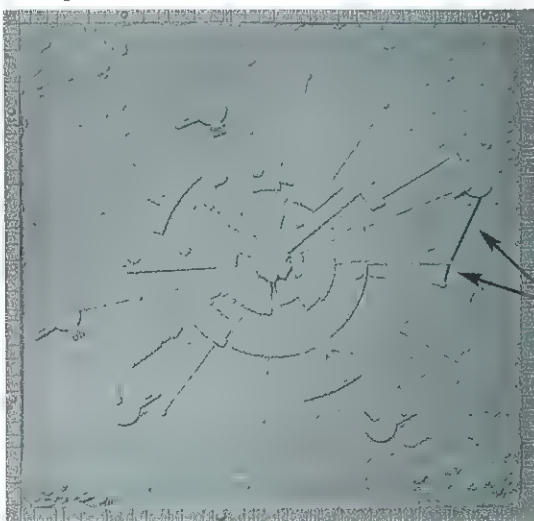
Moonbase Alpha



Approximately eighteen inches square, E. James Small's resin garage kit of *Moonbase Alpha* assembles from just two pieces: the base on its moon landscape enclosed within a 'frame' made up of typical *Alpha* detailing and a separate central *command tower*. Cleanly cast, the kit improves dramatically on the old *Fundimensions Moonbase Alpha* injection plastic and vac-form subject upon which it is based by featuring the correct number of *Eagle* launch pads (five as opposed to *Fundimensions'* three); a more authentic, better detailed configuration of buildings and travel tubes; a convincing resin moonscape and peel and stick launch

pad decals (optional—the steady of brush and strong of eye will discover that the pads already feature tiny, raised 'landing lights'). Glue the *command tower* in position and you're ready to paint (slightly weathered white buildings, brown-grey landscape). Purists will, however, want to add the two 'travel tubes' shown in the photograph of the unpainted kit (these can easily be made from lengths of plastic sprue) as they have been omitted from the model. The finished piece looks great hung on a wall (hooks need to be two-part epoxied to the back) or stuck to a wooden base of the same dimensions to give the kit more depth

if it is intended for display on a shelf. A worthy addition to the *Space: 1999* modeller's collection.



For greater accuracy shuttle tubes made from plastic sprue need to be added as indicated.

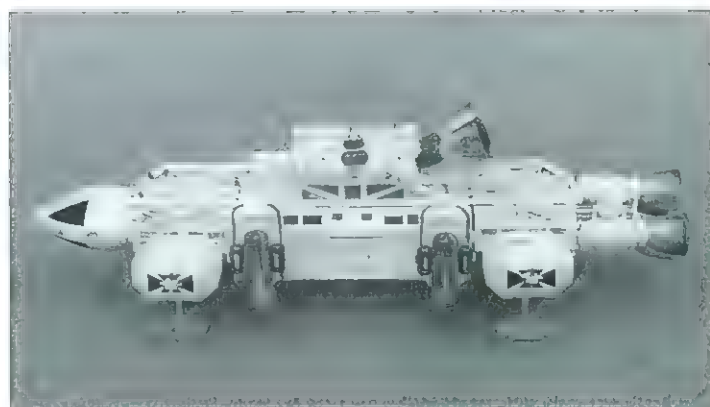
Alpha : \$110.00 U.S. dollars (unfinished kit); \$150.00 U.S. (painted, finished version) including surface shipping within North America. For shipping to the rest of the world add \$5.00 U.S. surface or \$20.00 dollars U.S. air mail.

Spine Boosters: \$25.00 U.S. includes surface shipping within North America. Rest Of World add \$2.50 per kit surface or \$5.00 airmail.

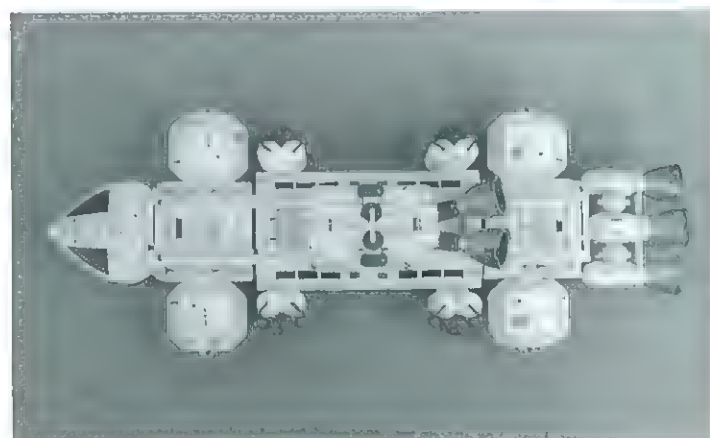
Eagle boosters

Also from E. James Small, these two resin 'accessory' kits are to scale with the re-released *AMT/ERTL Eagle* they are designed to enhance. *Eagles* in the series were sometimes fitted, particularly in the second season, with 'strap-on' boosters to give them extra 'lift', these being featured top-centre on the craft's 'spine' and/or on the sides of the passenger pod. The kits, which come poly-bagged with a header card, replicate two types of booster seen in the programme. The *spine booster* pack features a six-part assembly which sits above the passenger pod. Peel and stick decals are included. The *heavy*

lift boosters kit comes in twelve pieces which make up into four complete units, one for each corner of the central pod. Again, adhesive decals are included. Pieces are, on the whole, adequately cast, although some cleaning up and filling was necessary on the review samples. Assembly presents no great challenge and, once in place and painted, the boosters add a touch of colour to the *Eagle* (painting instructions are included) and certainly make the re-release (which is a little lack lustre as a straight-from-the-box subject) look as though it means business.



Spine and pod mounted boosters convert the *AMT/ERTL Eagle* re-issue into a meaner looking beast.



Side boosters: \$29.00 U.S. includes surface shipping within North America. Rest Of World add \$2.50 per kit surface and \$5.00 air mail.

To order any of the three kits send check or Money Order to: E. James Small, 3333 Rosser Ave., Brandon, MB., Canada, R7B 0H1 [tel (204) 726-5087]. Enquiries can be sent to the above address or emailed to: eagleone@escape.ca

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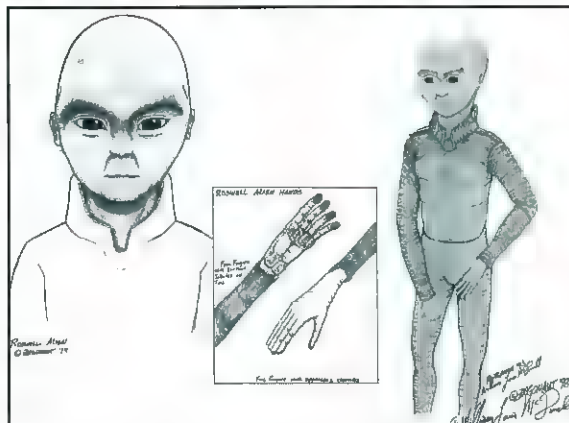
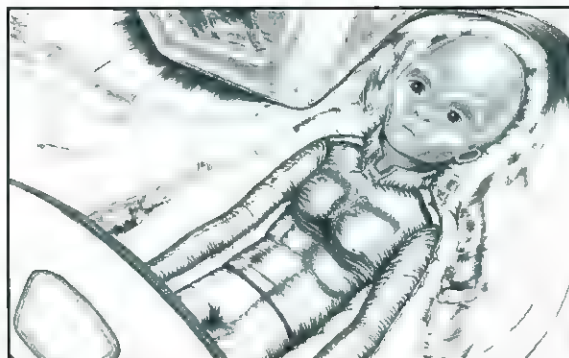
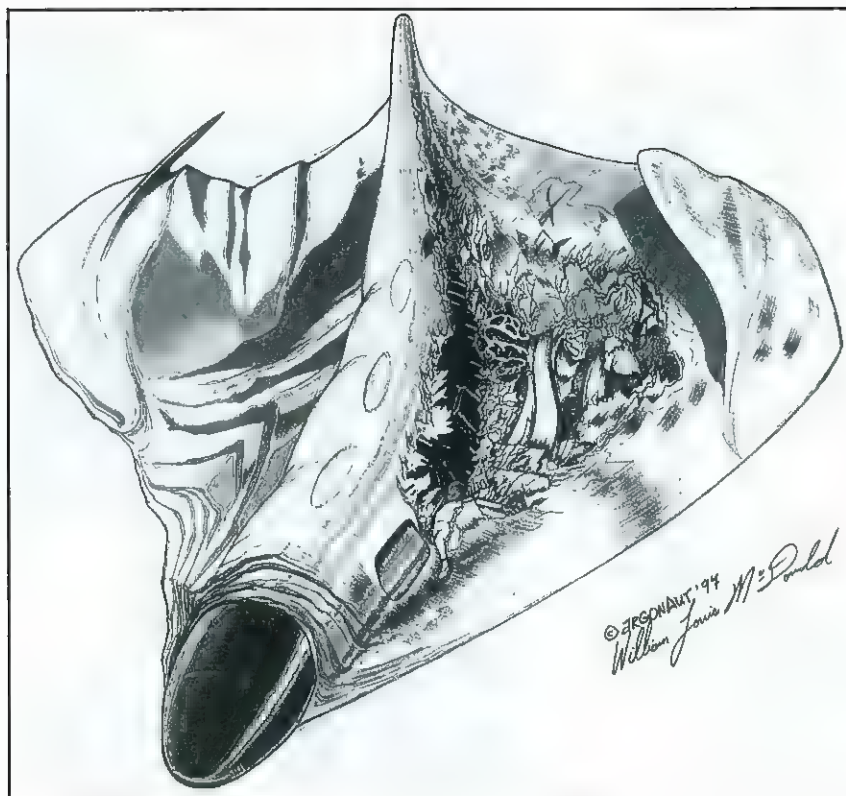
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The Investigator and the UFO—part two

continuing William Louis McDonald's extensive coverage

of the most unusual background story to the production of a series of kits—ever.



Roswell 'Chimera' aliens—physiology and life support.

The Roswell Spacecraft was inhabited by a minimum of five flight crew members and as many as seven. The reason this is known is because all surviving members of the United States Army Counter Intelligence Corps (CIC atom bomb security agents) described five cadavers as having been recovered, mostly intact but decaying at an unnaturally accelerated rate.

Stories of unidentified or unusual carcasses persist at the Corona Foster Ranch gouge site 40 miles northwest of the ship's final resting place in the arroyo on the McKnight/Ridgeway range (now owned by rancher Hub Corn) closer to Roswell city limits. Research Journalist and former co-author partner of the two *UFO Crash at Roswell* books, Donald R. Schmitt, continues to pursue information on those two assumed to be missing cadavers.

Seven seats or crash couch-like structures were described, leading the CIC officers and the Wright Patterson AFB 'Working Group' to assume a full crew complement of seven.

The CIC personnel were all prior combat and spy operations veterans of WWII. Each had been mustered out of Army or

Navy Intelligence, the Office of Special Operations (OSO) and the Office of Strategic Services (OSS). All had a literal license to kill—authority to use deadly force based upon their individual situational requirements in protecting the atom bomb technology and parts from Russian, German, and Red Chinese enemy spies.

When they converged on the UFO that crashed in the arroyo north of what was then the world's only atom bomb deployment base town, they were expecting something reptilian and horrible—like the octopods from the original H.G. Wells' *War of the Worlds*!

What they found affected them emotionally above and beyond all expectation—they found five deceased alien beings that resembled little bald children

of Asian origin. Little dead children who were later found to have suffered horribly before death but had profound expressions of 'angelic' innocence on their little faces.

Three Army physicians—a hematologist, a pathologist and a flight surgeon, were able to conduct a preliminary autopsy and forensic anatomical survey of at least one and possibly two of the cadavers. They described in detail to ex Army Intelligence officer Leonard H. Stringfield their observations of the cadavers in 1958.

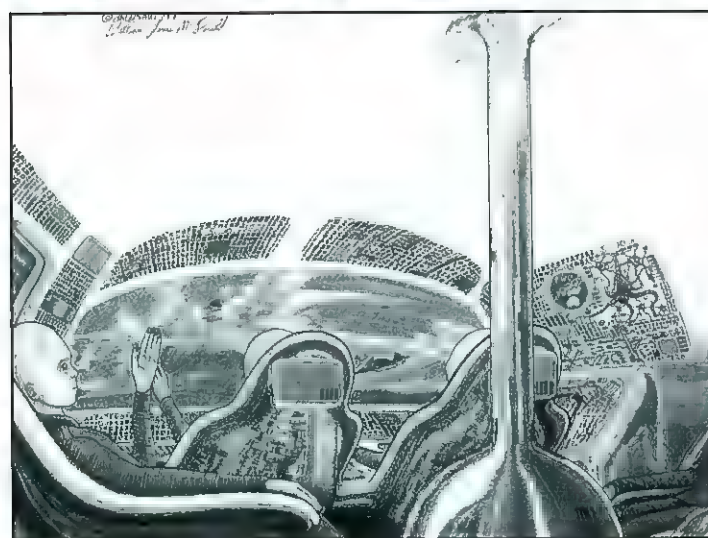
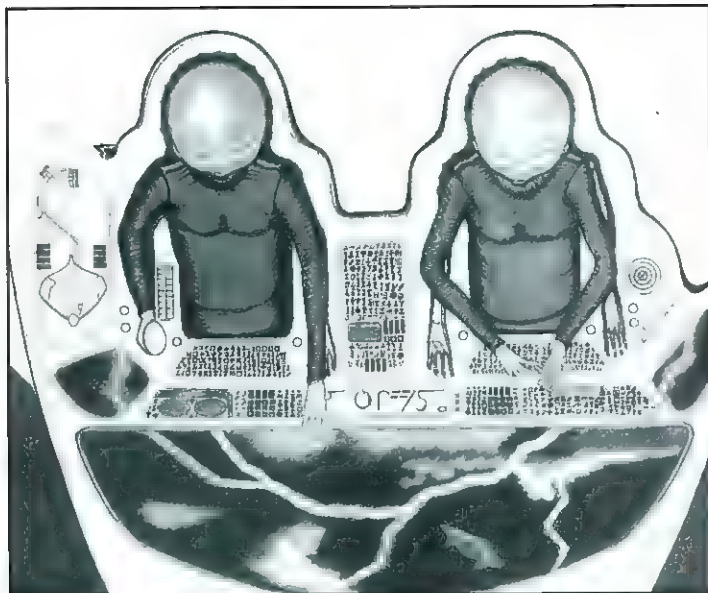
The Roswell aliens were clearly not a species of earthly origin. They were of overall humanoid shape, averaged between 3' 8" and 4' 5" in height when standing. They averaged approximately 40 pounds in body weight. Their heads were hairless and overly

large with proportionally smaller, skinnier bodies with forearms longer than is normal for human proportions. Two arms, two legs. Hands and feet.

Their skin was, to the naked eye, of the appearance of the tiny, beaded, granular scales found on baby hawaiian albino geckos or the tiny beaded scales in the armpit of a baby iguana. The color was the pale, translucent coloration of many baby albino lizards and snakes with an under coloration of the underneath tissue layers giving the skin an orangy-tan to yellowish-beige overall color with patches of bluish-gray in some sections.

Nowhere on their heads were there any hair follicles. The backs of their heads did show a tiny amount of something akin to barely visible cell or 'peach fuzz', as did patches in the temple regions on both sides above the vestigial nubs of what were barely protruding ear rims and lobes.

Both ears rode lower down on the jaw line than is natural in humans and other former hominid species on earth. Their noses were tiny nubs as observed



in human fetuses and newborns—just a small, floodlit protrusion about the nasal orifices.

Their mouths appeared as a wrinkled fold. They had vestigial lips, nearly invisible. Their mouth interiors were only two inch deep slits. They had no teeth or enamel structures. In place of teeth and gums was a chitinous material similar to the horny beak structures of turtles. Instead of normal throat/tongue/glottal structures were simple vertical flaps of tissue, dividing the mouth from the vestigial oesophagus/stomach tube structure and similar to the valve-like throat flaps in alligators and crocodiles!

Their eyes and the bridges of their noses were inset into their heads more deeply than is natural in human children. The eyes were slightly larger in proportion to the head than in humans and they had white sclera, thin brown irises and large dark pupils which were human-like but not in the same proportions. The

tissue and lids surrounding the eyes were in the design pattern common to Asian children of Mongolian or Filipino ethnicities. Eyelids were very thin, almost transparent, and, when open, were barely visible folds. They were *not* the big, black, wrap-around eyes repeatedly described as those of the alien 'Gray' species associated with the worldwide majority of alien abduction cases. The Roswell aliens had little in common with the better known 'Grays'.

Their clothing was described as one or two piece jumpsuits made of a sterile weave of spun metallic fibers that were like aluminum foil on the outside and as soft as goose down on the inside.

After removing the clothing, they were found to have retained male or female vestigial characteristics—i.e. both sexes showed the remnant of ancient mammary glands (nipples) and tissue folds reminiscent of scrotal tissue or vestigial vulva folds.

The beings' sex organs were far more atrophied even than the appendix, wisdom teeth and little toes in most humans. Completely non-functional, in no way involved in any possible reproduction capacity.

They had no anus or rectal area. No alimentary canal, colon or digestive tracts below an atrophied remnant of what might have once been a stomach.

The lungs were severely atrophied. The blood was a clear fluid, with *no* haemoglobin—no red blood cells and no leukocytes (white blood cells). The closest biological fluid to the alien blood was the blood of a species of fish living in the cracks of icebergs in the seas surrounding Antarctica—a fish with a chemical clear antifreeze in its blood to keep it from freezing solid in the 28 degree water and that absorbs oxygen from the water directly through its skin, bypassing its gills and normal cardiovascular oxygenation processes.

The legs were thin and shorter proportionally than in humans. The feet were a story unto themselves. After removing the metallic booties, it was discovered that the flesh between the toes had grown together and extended outward to then fold back over the entire foot like a living set of 'socks'! An X-ray proved that a cartilaginous skeletal set of bones for five toes existed under the flesh on these tiny, child-sized feet.

The two aliens found in the forward-most seat/console structures up against the wrap around, *Star Trek* style viewscreen at the forward 'cockpit' end of the crew cabin had only four fingers with no opposable thumbs on each of their two hands. The common assumption is that they were the two 'pilots' or flight control crew members. The one and only 'joystick' lever or control stick which 'grew' out of the right hand (starboard) forward cockpit console was a perfect palm and four-finger print match for the four-fingered hand of the alien found dead in that seat. A perfect signature grip fit. Just like the electronic signature grip on sniper rifles used by agents in various secret service agencies around the world.

The other three cadavers were found with four fingers and their expected opposable thumbs.

They were assumed to occupy the seats straddling the central bell dome reactor structure, the rearward facing console seats and in the rear-most forward facing crash couch where the ship's 'captain' or 'translator' crew member was recessed with the crown of its head inserted into a cervix-like niche.

The most significant aspect of the aliens was that under the microscope their skin was not semipermeable tissue like that which most mammals and humans have—that is skin which holds in vital fluids and prevents access of all the natural species of rot bacteria while that mammal or human lives. Instead the Roswell aliens had something akin to synthetic screen mesh—skin tissue which could neither hold in bodily fluids nor keep out the rot bacteria—which meant that the aliens would have had to live in a sterile amniotic broth-like fluid, absorbing oxygen, nutrients and water molecules directly through their skins.

Having the characteristics of some fish, some amphibians, some reptiles and hominid mammals (i.e. the atrophied mammary glands) these aliens had to be artificially bred to live their entire lives inside their synthetically sentient, artificially intelligent spacecraft in a sterile fluid environment, serving in various reconnaissance missions with their spacecraft, like 'worker' drones in some massive 'hive' society.

Having both mammalian and amphibian/reptilian/fish characteristics, these artificially bred aliens were not 'hybrids' as a cross between a human and a chimpanzee or between a wolf and a coyote would have been. They were, instead, gene-spliced 'chimaeras' or 'chimeras'. This is why I call them the Roswell 'chimera' aliens.

Because of the ship's ultra-light weight and the amphibian skin and tissue characteristics of the Roswell aliens, I have proffered the hypothesis that they were unable to function outside of a sterile oxygenated fluorocarbon fluid environment similar to that fluid chemistry that Corporations routinely drown rats, rabbits and *Navy Seals* in, over and over again!

When the ship was struck by lightning and the hull gash imploded and disintegrated,

Dateline: 4 July, 1947. Time: 11.59pm...

A review of the Roswell Crash Scene

The second of two Roswell Incident kits from TesTors

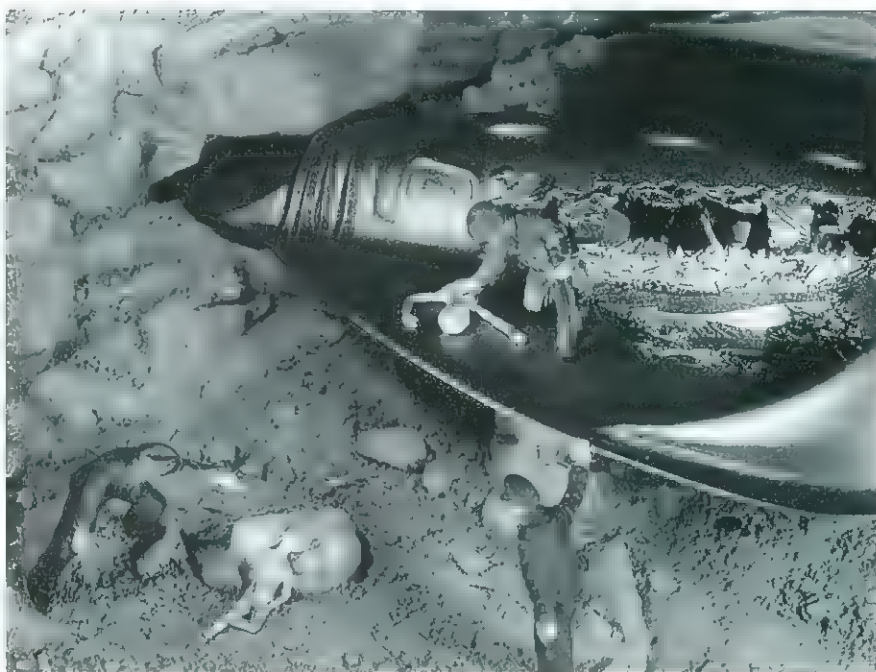
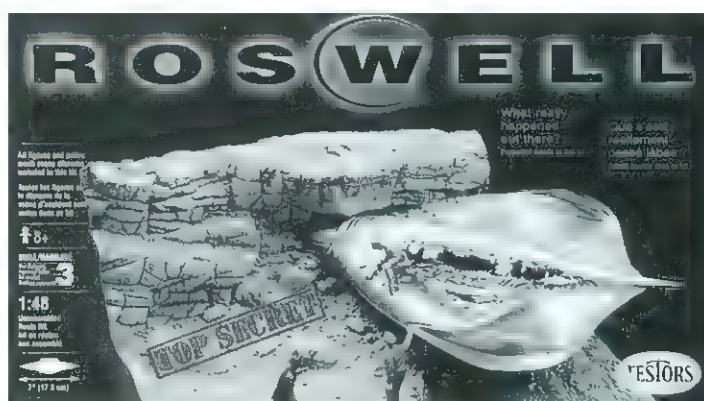
words bob gould • photographs tim hooper

As soon as I saw the box art for this kit I knew I was going to enjoy making it. It's one of those projects that's a little more than just putting together a craft—because you are also provided with a superbly crafted, three dimensional diorama depicting the mesa wall that the UFO came to rest against plus the people who found it. Also, having already completed the 'in flight' ship (see previous issue of this magazine) it was going to be nice to finish the story.

Once again the instruction booklet gives you the background story behind the incident, which makes very interesting reading and gives you a feel for what the finished UFO should look like. But, like all kits, this one begins as a box of bits which, this time, are cast in resin. *Very thin resin* in some cases, presenting a problem when cleaning off superfluous material. No matter how carefully I tried to tidy each part I found I was losing more than I wanted to. Ultimately this meant using more P38 Easy Sand car body filler than should have been necessary, but the end result was a perfect finish.

So, after carefully cleaning up each part and washing it in soapy water to remove the mould release agent, it was down to the assembly. This began with the cabin insert which, although not much of it shows through the tear in the fuselage, is worth doing properly. As with the in flight craft, I'm not going to take you through the process step-by-step—the instructions do that adequately—except to suggest that it is worth emailing the man behind the research, William L. McDonald, to receive his additional two page construction guide. This will give you more than enough information from which to produce a perfect kit.

Once the cabin sub-assembly was together I sprayed it chrome silver, painted the crew suits silver and rendered the alien skin a dull flesh with a hint of



a blue wash. The decals supplied were neat and added small spots of colour to an otherwise stark environment, but all to no avail as you don't see them once the unit has been sandwiched between the two halves of the hull. Superglue, pegs and elastic bands ensured good mating surfaces and the attachment of

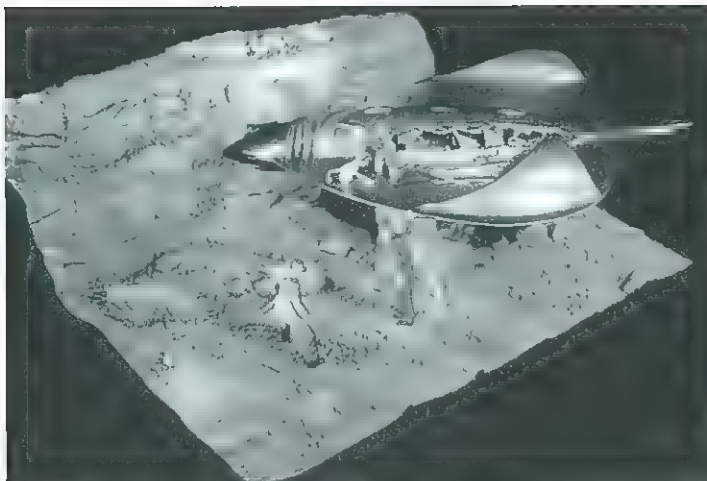
the upper fins with P38. Application of fine wet and dry emery subsequently removed all join lines. The final stage of preparation was a coat of grey primer, applied after masking off the open split in the hull.

As the craft had been described as a "homogenous unit like a

living organism" I imagined that, when 'powered down' after the crash, the coloration would be a duller, darker version of that seen whilst in flight. The spray chrome silver of the first kit therefore became a Nissan Silver Blue (metallic) and the Silver Blue of the first became Nissan Blue 715 (metallic). I did, however, spray small, random areas with the chrome silver to indicate its original high gloss finish. Finally for the upper hull, I picked out the sensor array cover with a slightly darkened Humbrol Gunmetal (53). The hexagonal power grid on the underside was mapped out by Bill's description of it being 'Obsidian'. Yep, that had me baffled for a moment too, but I have it on good authority that obsidian has an overall effect of black, brown and green. That was just perfect because I had aerosols

in silk black, Vauxhall Bright Copper (metallic) and Rover Tara Green (metallic) to hand. A solid coat of black came first—after masking off the hull edge—followed by careful blending and general 'playing around' with the copper and green until a satisfactory 'dead' appearance was achieved.

The two sections of the diorama base were simply washed, stuck together with an epoxy resin adhesive for extra strength and all the faces 'squared up' with an electric sander. Colouring is up to the individual, but you couldn't do much better than to follow the box art photograph—which I did. A combination of Humbrol matt browns with infinitely variable shades made up with the addition of dark brown or white allowed me to paint, wash and dry brush the mesa to a convincing finish. What I should have included—but didn't think about until after the photographs were taken—were small 'bushes' to add a little colour to the scene.

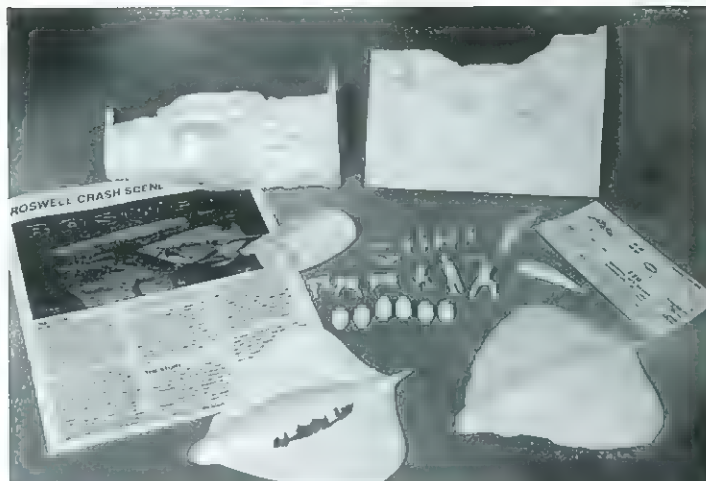


Never mind. The flat faces of the base were sprayed with silk black, which effectively 'hides' them and therefore concentrates the eye on the main area of interest.

The three figures supplied are wonderfully crafted and convincingly posed. Acrylic paints achieved a good material-like finish, with the soldier in greens, the officer in browns and the civilian in grey. When you've painted each figure it's worth 'washing' it with a medium/dark brown which will settle in the

troughs and add relief, highlighting the folds and edges of the material.

As I said at the end of the previous article, I'm not a believer and I'm maybe even more than a little sceptical, but that didn't in any way prevent me from enjoying the construction and painting of the two kits—particularly this one. I would also strongly recommend that, if you are thinking of buying one, go for both as these kits are really as inseparable as *Mulder* and *Scully*!



SF&F Pocket Guide

TesTors Roswell Crash Scene resin kit

Value for money:



Ease of assembly and instructions:



Suggested for standard assembly: P38 Easy Sand filler (or alternative); fine emery paper; superglue and epoxy resin adhesives.

Paints: Acrylic spray primers in grey and silk black. Car sprays in Nissan Silver Blue (metallic), Nissan Blue 715 (metallic), Vauxhall Bright Copper (metallic), Rover Tara Green (metallic). Citadel acrylics in flesh, red, brown, green, black, white and blue. Humbrol chrome silver.

References: Supplied instructions and box art.

William L. McDonald.

E-mail to: Argonaut-GreyWolf@home.com

Next time, (just five weeks from now) in

Sci-Fi & Fantasy

M O D E L S I N T E R N A T I O N A L

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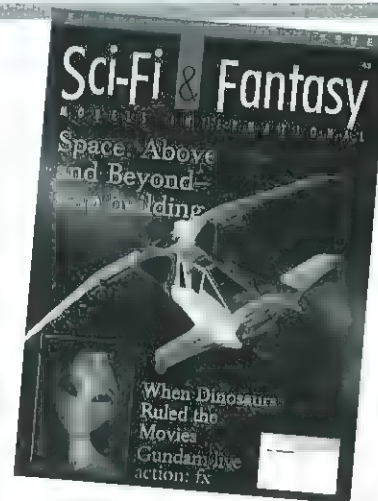
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- Perfect Prosthetics
- Wild, Wild Robots
- Classic Spacecraft



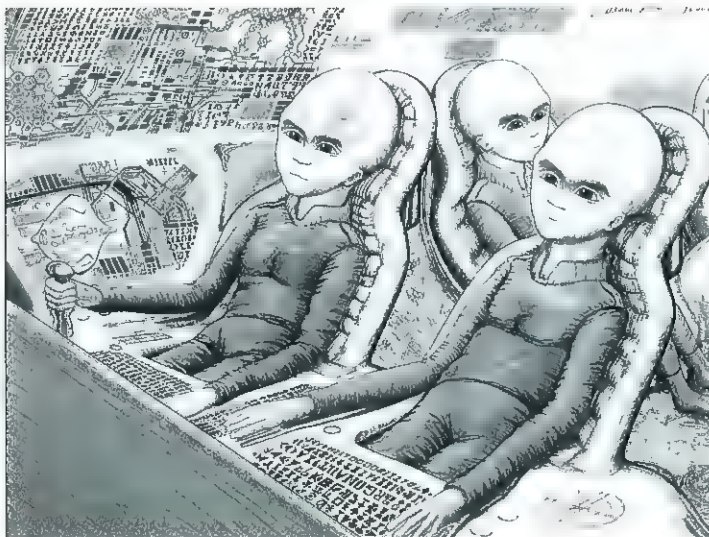
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much of the fluid spilled out and was lost. By the time it hit the upper wall of the arroyo, most of the fluids were gone and what pools were left on the flight deck were rapidly evaporating. The rate of evaporation would be similar to that for Freon chemicals i.e. Trichlorotrifluoroethane.

Those aliens who survived the several crash impacts died slowly, painfully, in agony from massive dehydration, slow decompression sickness and the rapid onset of systemic infections from terrestrial rot bacteria species.

They were on the ground only six and one-half hours, yet the stench of the onset of decomposition was as intense as if human children of similar biomass had been on the ground for three to five days in the stifling heat and drenching thundershowers of that New Mexico Summer. By the time doctors got to them in the RAAF base hospital, the rate of decomposition and stench was supremely traumatic to the medical personnel examining the cadavers. All witnesses attested to the stench.

And yet they had those 'angelic' expressions of innocence as described by Leonard H. Stringfield on his deathbed and the surviving CIC retirees.

Flight Deck Filtration System

If the aliens were truly amphibians, and if the ballast for the spacecraft was the fluid in the interior crew compartment, then a filtration system would have been a must. Just as any closed aquatic system smaller than a fair sized natural pond must have filtration and running

water to provide oxygenation and biological cycles—like any fish tank in any home—the spacecraft needed an advanced filtration system to provide hydration, oxygenation and possibly the nutrients the inhabitants needed to survive.

As the spacecraft was nearly as small as a *Piper Cub* with perhaps up to seven forty pound occupants, it would have needed an ultra-light weight, extremely efficient oxygen-CO₂ exchange system that would also scrub out any biological impurities such as ammonia, nitrites, urea and nitrates as constitute the basic chemicals in the urine of aquatic species.

The problem of where it was located was solved by the testimony of our *Wright Patterson AFB* documents officer witness. He at first did not realize the significance of his testimony. He stated that, while crawling through the interior of the wreckage via the gash, he became aware of the texture and patterns on the floor of the interior crew compartment. They were swirled lines and grooves somewhat similar to patterns seen in brain corals and fingerprint patterns. He stated that crystalline protrusions were also present and that the entire effect was similar to the asphalt/polymer antiskid texture that is applied to the flight decks of all modern *Nimitz Class* aircraft carriers.

He stated that, upon closer examination, the texturing was found to be layers of hollow micro tubules packed or 'morphed' in layers which resemble nothing on earth as much the hollow micro tubules which make up the interior of a kidney dialysis bag. The overall strata was also similar

to advanced layers in expensive marine aquarium filtration systems.

Along the edge of where the flooring layers merged into the interior fuselage walls (bulkheads), several striated vents opened up into the interior cabin.

It is my opinion and hypothesis that the interior fluids were sucked down into the flooring layers and through exchanger layers and then refiltered back out into the crew cabin through the gill-like vents along either side of the cabin.

Flight Crew Stations

Each alien had a crash couch-like seat that morphed into the associated consoles and bulkheads in a seamless manner. Each seat was form-fitted to each alien. Each seat grew out of the floor of the spacecraft from a quasi roundish triangular base or root. The closest way to describe how these appeared would be to compare them to gleaming, mirror smooth, metallic sea anemones that held each alien in a grip similar to how terrestrial marine animals—various sea anemone species—grip the small fish they prey upon.

The origin of velcro?

For years the origin of velcro—little plastic micro hooks that cling to little plastic micro rungs—manufactured in strips, has been a source of many legends. The most pervasive rumor was that it was invented by *Phillips Labs* or *Bell Labs* or *North American Rockwell* for astronauts to use in securing free floating items in the microgravity of orbit.

Later, during the *Apollo One* fire, it was discovered that velcro functions as an accelerant in a pure oxygen environment and as such is a serious fire hazard. In early space capsules astronauts and cosmonauts breathed pure oxygen at 3-5 PSI with no nitrogen or other inert gasses. In the preflight test protocols, oxygen was pumped into the cabin of a space capsule at higher than normal pressures to test the pressurization of systems and so forth. In an over pressurized system, velcro is not just an accelerant and a hazard, it is explosively dangerous.

In normal air (71% nitrogen, 21% oxygen, 4% carbon dioxide, and a few trace gasses at approximately 14 PSI), velcro fulfils an urgent requirement

on the *MIR* Space Station and the space shuttle fleet for controlling small items in constant use.

Col. Philip J. Corso stated in interviews with me that velcro was inspired by tiny tentacle-like hooks that morphed out of the soft milar-like metallic cushions of each of the crash couch anemone-like seats. These tiny hooks gripped the spun metal fibers of each of the aliens' jumpsuit uniforms wherever contact was made in the form-fitted seats. This grip aspect was a far more advanced *restraint system* than a harness or set of safety belts as it gripped the entire mass of the body by its tight fitting, long sleeved, up to the neck, uniform, while the headrest 'absorbed' the rear or the skull and portions of the crown of the head. Just as the 'cervix'-like niche absorbed the crown of the head of the 'skipper' or ship's 'translator'.

Our *Wright Patterson AFB* documents assistant to the 'working group' had no objections or dissensions from this manner of describing the seats.

Each seat with the thousands of tiny hooks is resemblant of a metallic sculpture of a species of anemone with fleshy extended petals or rings with thousands of tiny stinging tentacles that clutch and grip a fish or item of food. The stinging cells assist in the muscular grip as they are barbed hooks. They also envenomate the victim to paralyze it and to begin the process of external digestion.

Sea anemones are marine animals that are gigantic (comparatively speaking) cousins of the near microscopic individual coral polyps animals (reef builders who extrude calcium) or hydra species (free swimmers) of animals in the ocean. They are invertebrates with no centralized nervous systems found in tidal pools and in all oceans at all depths. A few have stinging cells potent enough to irritate or cause a stinging sensation with envenomation in human fingers and palms while beach combing or scuba diving.

Add this living grip of each crew station to the buffering and cushioning effect of the interior sterile fluid itself and the physical inertial dampening and restraint system effect is complete. No discomfort would be experienced by the flight crew while slamming

into the atmosphere, diving into the ocean, or flying upside down while scanning the ground for protracted periods of time. No flight crew member would drift or be jerked free of its control station. No alien would be splattered against any bulkhead during any sudden high speed maneuver.

This fluid and restraint system would have allowed the aliens to initially survive the impact with the ground at the Corona Foster Ranch and the second impact into Hub Corn's Arroyo, 40 miles to the southeast after skipping and tobogganing across the hill tops in between.

Crash Site Kit development

Testor VP of Marketing Ernie Petit called up out of the blue with a request to extend our contracts to cover "A resin version of the crash site." A quick check with Kevin, Don and Sharon our agent secured the deal.

The tooling contract was given to a Michael Williams at his *Tek Direct* resin fabrication facility in Chino Hills, Southern California. Michael and his production facility experienced a number of delays but managed to ship the entire load to the main *Testor* factory at Rockford, Illinois for packaging and distribution.

Ernie Petit stated that the damaged ship had to be in the exact same scale and virtually the same molds to hold costs to the minimum. I completely agreed with the need for the scale to be the exact same as the first *Roswell UFO* and the Bob Lazar *S4 Sportsmodel UFO* kits. John Andrews, the original polystyrene kit's *Testor Corporation* designer, was already quietly retired in San Diego where he was suffering through the last stages of his bladder cancer. He would be unavailable for the most part on this spin-off kit project.

My solution to this nightmare was as follows: I took the very first built polystyrene Roswell spacecraft that John had made for me and proceeded to 'gash it' in layers to match the texturing and configuration of my two gashed and crumpled version drawings of the spacecraft and the original crash site image I had published so many times before.

I took a screw driver, a probe and a dental pick and I heated them up on the rings of my hot electric

kitchen stove. As my horrified wife (she loved John Andrews and his gifts!) watched, I melted out the basic gash configuration in sections from the port wing and port (left side) upper dorsal fuselage, from behind the hatch to near the base of the nubby tail pipe. After achieving the overall pattern and dimensions of the gash, I snapped and broke out the interior portions of polystyrene and discarded them into my scrap polystyrene bin. Lori was in tears.

Next I cut layers of 3 x 5 index cards in swirled layers resembling the muscle patterns of a bird's wing and a couple of thin over strips in the same general pattern out of thin polystyrene. I then glued these down in layers with *Testors* glue. I went down to the beach, out to the tidal pools, and recovered several bits of calcified algae, strips of dried seaweed, twisted, curled dry detritus and bits of shell, etc. While perched on a rock I glued them in to the sections toward the rear of the wing where I wanted a 'near-biological' texture underneath the torn strips.

Next I broke out several machinery, panel covers and avionics boxed items from a number of the Japanese *Macross* kits to insert along the edges in layers closer to the actual flight crew seats. I cut ribbing to match the icon printed 'I Beam' spars described by Dr. Jesse A. Marcel Jr. (Col., Montana Army Air National Guard), the son of the Roswell Army Airfield Air Intelligence Officer who brought some authentic crash

debris home to show his wife and son back in the early morning of the eighth of July, 1947. I used the thinnest ends of flat toothpicks to accomplish this effect as I glued them in in an irregular pattern to match the disintegration and melt pattern of the gash sections in my drawings.

Lastly, I took polystyrene shavings and glued them edge-on into every conceivable crack and layer to finalize the layer effect. Then I used copious amounts of *Testor* glue to simulate 'melt' in every remaining crack and crevice. I'd make the glue string and pull like spider webbing to simulate twisted fiber optic 'neural cabling'. After it was totally dry, I 'swamped' it all in silver paint.

Needless to say, not only did Lori stop crying, but I knew John would have appreciated the sentiment. I found out later that he died on Good Friday, 1999.

I sent this one-of-a-kind item to Michael Williams to use as his guide for the ship parts molding. To this day, he has never returned it, and I wish I could find him to ask for it back.

Neither Ernie nor Michael could find a way to bend the entire body upwards as was how the *CIC* witnesses described the ship after the impact in the arroyo. Michael Williams used copies of my drawings to create ripples and crumples on the mold. Ernie told him to make some of the power cells fall out from the bottom and under the wings.

This was inconsistent with what the *Wright Patterson* witness and the *CIC* described where everything not actually in the gash remained intact despite the warpage caused by impact crumpling.

Extra bodies are included in the kit. Mini MP and *CIC* personnel are also included in 1/48th scale.

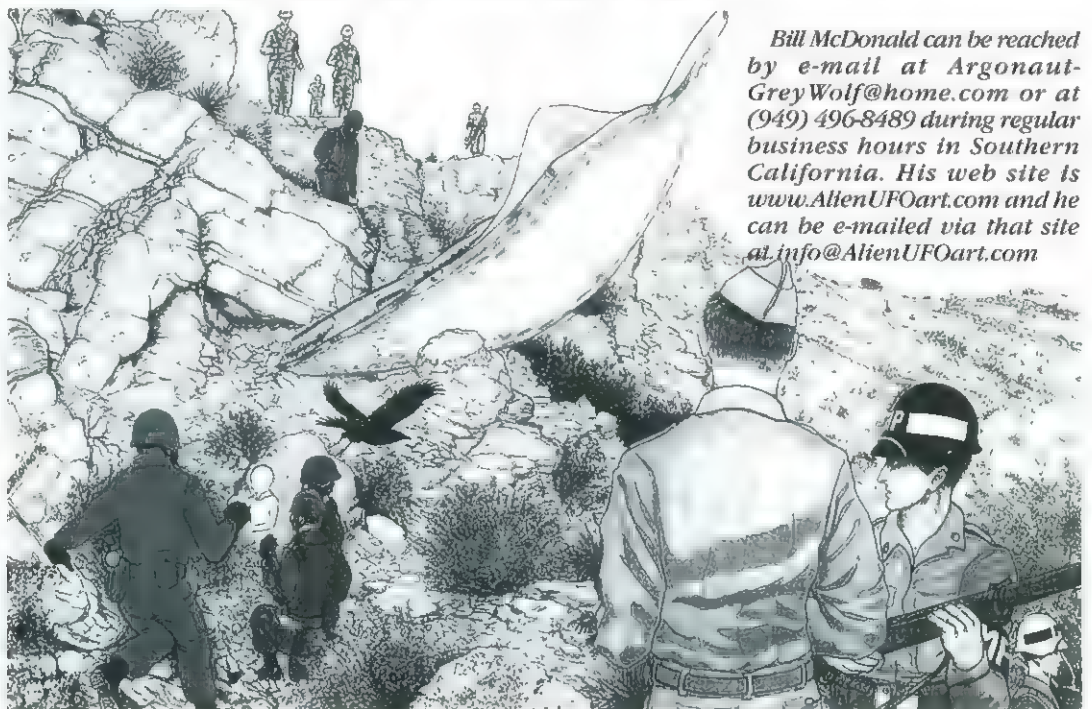
Because of the limitations of designing a base for a kit that is stable, Michael Williams was forced to put the spacecraft at the base of the cliff and to lower the overall height of the real life arroyo. In truth, the spacecraft was wedged into the limestone and gypsum cliff face a full two thirds of the way up above the base of the arroyo. It was stuck in by its forward sensor array shield like a dart in a dart board. It was only fifteen feet below a natural dip in the top edge of the cliff which we assume it was aiming for to scuff over the top of.

The *CIC* and MPs had to approach from underneath it or to climb down on top of it. Please refer to the drawings.

In my opinion, Michael Williams got the texturing of the limestone and gypsum completely right and that aspect was excellent.

Please remember when building the kit to use black and metallic brown to show that the power cells' energy has bled off and the ship is completely without power (Deenergized).

Bill McDonald can be reached by e-mail at Argonaut-GreyWolf@home.com or at (949) 496-8489 during regular business hours in Southern California. His web site is www.AlienUFOart.com and he can be e-mailed via that site at info@AlienUFOart.com



The classic Jupiter 2 from *Lost In Space* From concept to production model

ron gross



Ron Gross's original oil painting used as the box art for the *Polar Lights Jupiter 2* kit.

Photo © Bob Stapleton

For more than 30 years, the availability of a mass-produced injection molded kit of the Jupiter 2 spacecraft from *Lost in Space* seemed like nothing more than a wild fantasy to loyal fans of the classic TV series. In April of 1998, however, that dream was finally realized by the introduction of the Polar Lights Jupiter 2 model kit.

The announcement served to officially correct an error in judgment that this fine young company's namesake *Aurora Plastics* had made all the way back in the sixties, when it was decided that the overall design of the Jupiter 2 was too simplistic to generate sufficient interest. In the aftermath of my successful completion of a scratch built model which spanned many years, I was honored to have been brought aboard as both the technical consultant and the box artist for this exciting project. If ever there were an example of a childhood dream-come-true, this sequence of events certainly served to satisfy that description.

Ironically, I did not originally engage the project of constructing a custom scale model of the Jupiter 2 (specifically, the articulated studio miniature version) with any specific

marketing aspirations. The timing with respect to the release of the *Lost in Space* feature film, however, combined with the exposure of my prototype in both print and on the Internet, created a unique and unexpected opportunity. This article will retrace the major events that led to the conclusions for my original design, and culminate in examples of fine build-ups of the *Polar Lights* production model from a variety of proficient modelers.

A decade of informal Jupiter 2 research

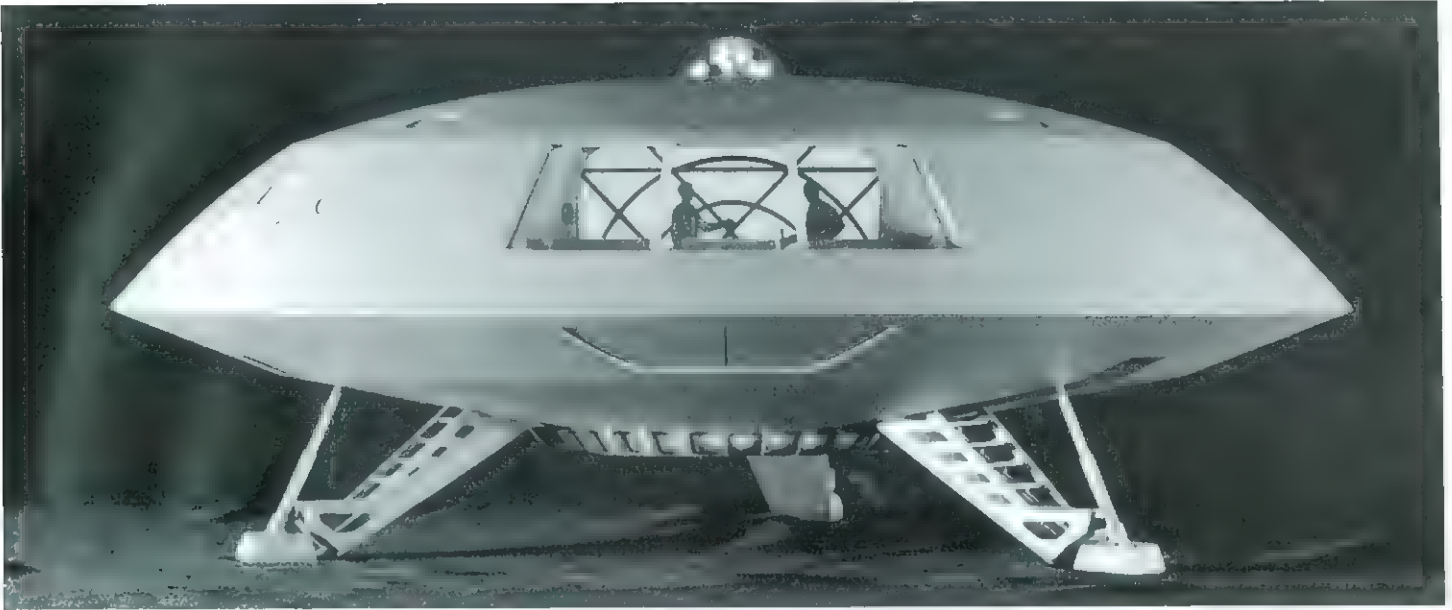
In reality, the 'modern era' of this adventure actually began for me all the way back in the summer of 1982. A small classified ad in an issue of *Starlog Magazine* from *Infinite Star Productions* described a mini four-inch replica of the long lost space ship, making it among the earliest of such offerings. I soon became

acquainted with the craftsman himself, none other than David Merriman, who is now a world renowned modeler and a frequent contributor to this magazine.

I listened with great interest and anticipation as David described tentative plans to market a larger ten-inch version of his impressive little creation, to which I promptly contributed a relevant light sequencing circuit. Unfortunately, interest in this follow-up venture soon dissipated, and the larger Merriman masterpieces were relegated to a few custom build-ups for individual clients. Although I was unable to fulfil my long-term dream of obtaining a larger model of the Jupiter 2 at that point in time, I took away something from the experience that was far more valuable: simply, the acquisition of a true modeling mentor to eventually aid with a variety of novel scratch-building techniques.

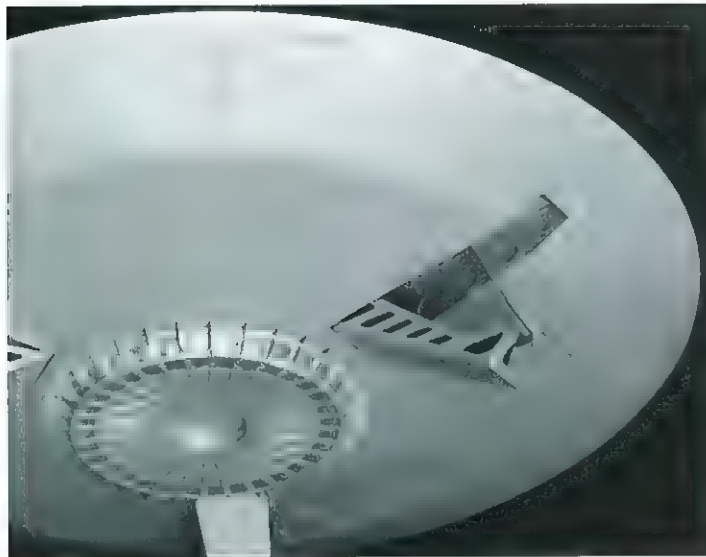
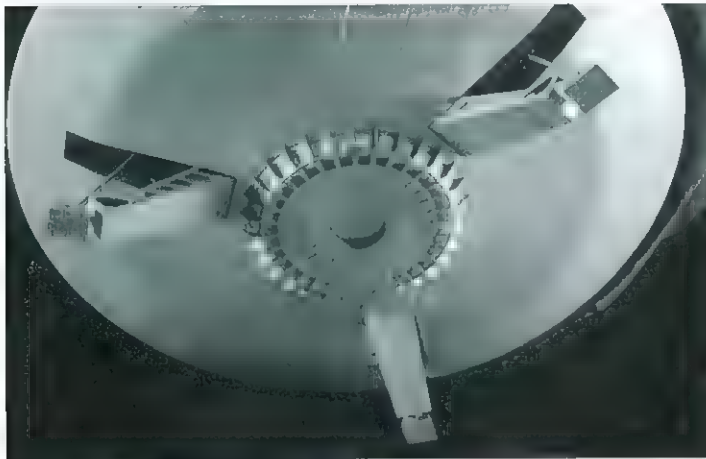
David's remarkable results were aided by an exclusive series of photos taken of one the surviving secondary Jupiter 2 miniatures, owned by collector/modeler Greg Jein. Utilized in the third season of *Lost in Space*, this model displayed the new *Space Pod* docking bay, but lacked the fine detailing and finishing exhibited by the singular 'hero' miniature. Additionally, the prop was still badly in need of restoration, having been heavily modified for use in Irwin Allen's subsequent feature film *City Beneath the Sea*. The photo set was shot by then Merriman associate Richard Messmann, who, the following year, made yet another interesting discovery at the library of UCLA. Irwin Allen had apparently made a donation of various materials some years earlier, and some of the actual blueprints for his TV-related props were suddenly available for inspection.

Included in this limited collection was a drawing casually labeled 'sheet 5 of 6', which displayed a revised profile for Jupiter 2 miniature construction. Among the included technical notes were references to a four-foot and a ten-foot model, the latter



Ron's completed *Jupiter 2* prototype, oriented to recreate the look of the classic landing sequence from the episode *Ghost Planet*.

Photo © Mike Dabney.



Centre: underside view of Ron's personal *Jupiter 2* model displaying surface detail and working electronics.

Photo © Mike Dabney.

Above: notice the extra detail inside the landing leg well—the side wall displays a distinctive circular pattern which has been revealed by publicity stills of the full scale studio mock up.

Photo © Mike Dabney.

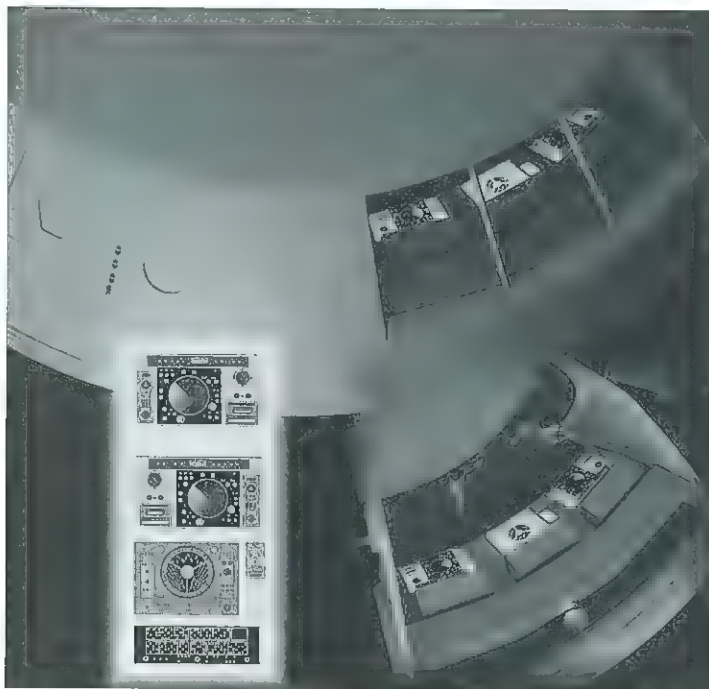
rumored to have been built for only a single stock footage shooting: namely, that of the infamous crash landing sequence. In addition to depicting the basic hull contour, the plan detailed adjustments that were deemed necessary for the conversion of the 'Gemini 12' single level concept (from the unaided pilot) to the extended and more familiar *Jupiter 2* design, both as conceived by acclaimed art director William Creber.

Upon receiving a copy of this treasure, I promptly created a complete two-sided outline by employing a common 'fold over' technique. I recall being somewhat disappointed by the result, as what seemed correct as a one-half profile representation simply did not look quite right when fully expanded. Although I was not yet fully aware, the fact is that the actual construction of the four-foot primary *Jupiter 2* miniature subtly departed from this surviving *Fox* plan, lending it an elusively distinctive character. And while other miniatures had been recovered and were now in private collections, the whereabouts of this unique hero model were not commonly known. If it were ever to be revealed, it would certainly not be intact, as the detached landing gear assemblies and the lighting ring apparatus were already in the possession of artisan Greg Jein. It became clear that the research was not yet concluded; it had, in fact, only just begun.

The mid-eighties saw a resurgence of interest in *Lost in*

Space—related material in the form of both fan publications and garage kits. In 1986 the *Alpha Control Reference Manual* was released, which featured Phil Lublin's masterful blueprints. The following year Mike Evans and *Lunar Models* gave us the long-awaited *Jupiter 2* vacu-formed kit, which was based generally on these plans (Phil, ironically, is the proud owner of the 'new' *Lunar Models* company). That same year I officially got into the act by preparing the *Lost in Space Technical Manual: Volume 2* at the request of an American West Coast publisher. This effort was similar to the existing *Alpha Control Reference Manual*, except that it approached the material from a studio production point of view, rather than speculatively treating the hardware items as actual devices. Unfortunately, I became aware of certain legal difficulties that the publisher was experiencing and I made a decision to withdraw the material just before it would have gone to press. Some of the drawings have since made guest appearances to support modeling subjects for other publications, and still others are available herein for the first time.

Although my 1987 effort was fairly extensive with respect to the representation of the primary *Jupiter 2* miniature, it was by no means final, as definitive answers were simply not yet available. In 1989 Shane Johnson released perhaps the most impressive set of blueprints to date, but they were designed to be faithful to their original *Fox* counterparts,



A composite shot revealing Ron's technique for detailing the cockpit area. Individual renderings of the panels were copied onto clear acetate to enable appropriate back lighting. Jim Pizar would also utilize this procedure for his award-winning *Polar Lights* production model build-up.

Mike Dabney photos, artwork and composite by Ron Gross

reference material permitting. By the time we reached the early nineties, however, some independent interpretations had begun to surface. Among the pioneering advocates of the general concept that the primary miniature was not entirely faithful to the *Fox* plan were custom build-up specialists Kim Brokaw and Jim Key.

Throughout this entire ten year time frame, my personal *Jupiter 2* modeling project had been an 'on again—off again' affair, with several (sometimes costly) diversions along the way. Having finally acquired the modeling skills to do justice to the effort, however, I made a decision that it should be 'on again' once and for all.

Putting it all together

Considering the vast amount of resources that are required by a comprehensive scratch building project, I was determined to make the effort worthwhile by coming up with a (hopefully) more advanced design than anything that had yet been offered. After sharing observations and exchanging ideas with several of the above-mentioned artists, I turned to long time friend Mike Sussek for assistance in finally putting the pieces together. Among Mike's many abilities were an expertise in tool and die, which he utilized by assisting both David Merriman and Mike Evans of *Lunar Models* on selected occasions in the eighties. He also happened to be one of the

most prolific science fiction archivists I had ever met.

Upon exploring his vast collection of photographic resource material, however, we came to realize that there were simply no publicity stills available that provided a clear profile image of the prop in question. We then scanned every episode of *Lost in Space* on video tape to determine which of the special effects shots best revealed the true hull contour of the popular primary miniature. The classic landing sequence from the episode *Ghost Planet* was the clear choice, as it was the only one that provided a straight-on profile view which was shot at a sufficient distance to eliminate virtually all lens distortion. As luck would have it, Mike also had a copy of that episode on 16mm film.

Although it is possible to engage a still frame with a standard 16mm film projector, obtaining a distortion-free photograph of the image in question is still a problem because of the positioning of the equipment involved. Mike's solution was to employ a translucent screen which could be shot from behind and simply have the image reversed upon processing. We analyzed several photos which were processed in this manner and we came up with some very interesting conclusions.

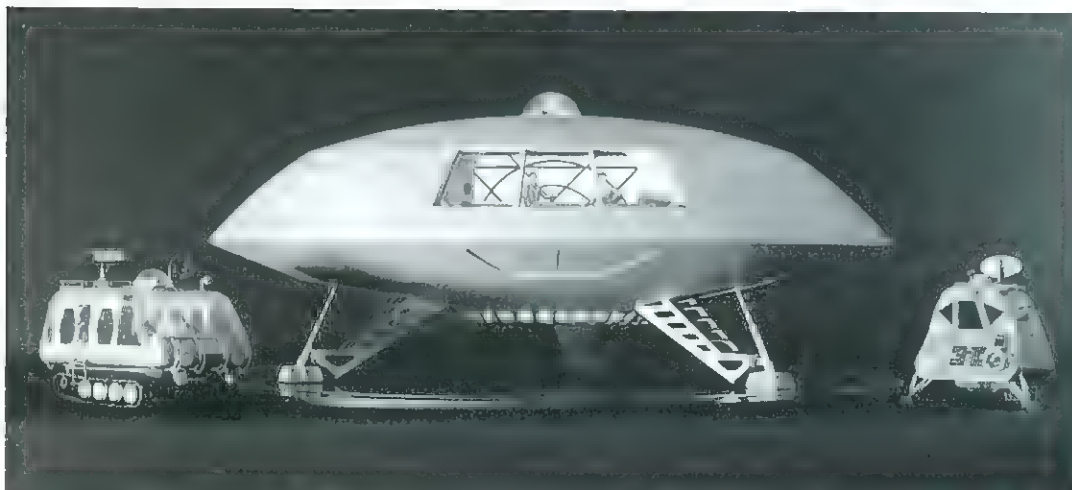
In order to establish a point of reference, we compared the lower hull proportions with those of the surviving *Fox* blueprint and found them to be an exact match. Now fully satisfied that we were dealing with credible source material, we noted that the top domes were in alignment as well but that the actual miniature contained additional upper hull stock which engulfed about 15% of

its dome at the base. Mike theorized that the additional height was intended to offset an equal extension of the lower deck from the original *Gemini 12* pilot version, which the *Fox* plan already specified. We entertained several more interesting theories but, in the final analysis, a precise tracing of the photo of choice was the best solution. I soon expanded this raw outline into a fully detailed blueprint drawing which promptly became the master plan for the project.

Today, as many people now know, the remains of the elusive primary miniature have finally been unveiled, which, several years ago, might have rendered much of the above research unnecessary. If indeed it does indicate some minor differences compared with our results, I would contend that Mike and I still came up with an extremely accurate representation of what is perceived to be the *hero Jupiter 2* model on film. Since this is the only reference source that most home observers will ever have, that, I believe, is what really matters.

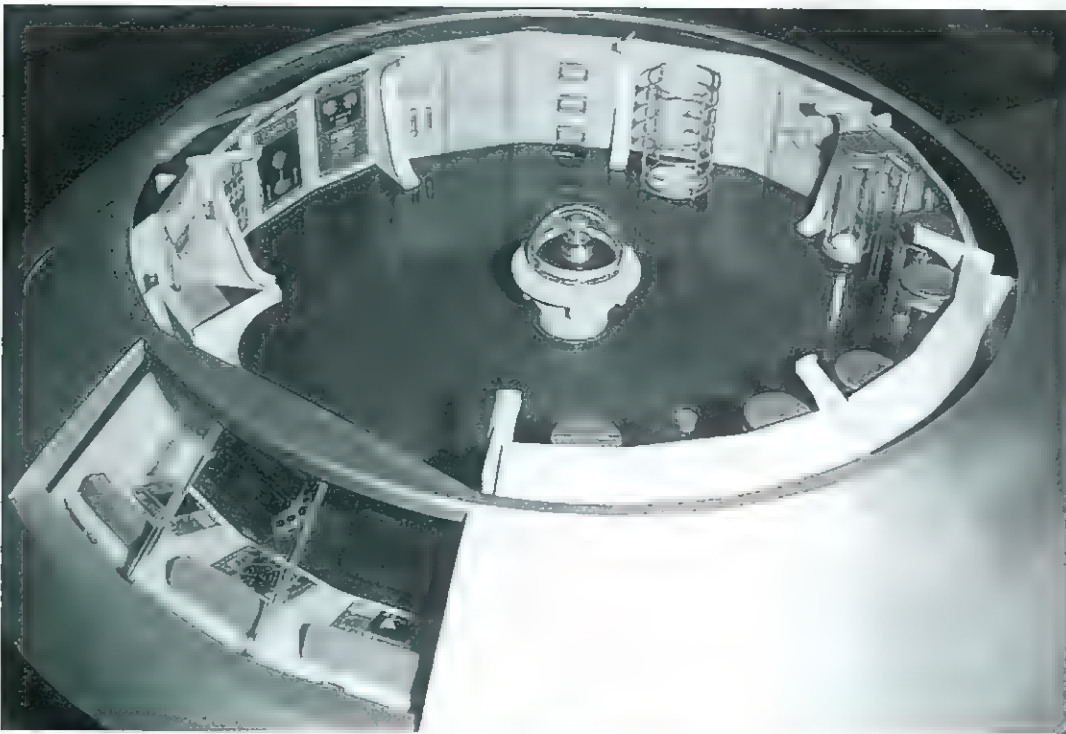
Scaling the Jupiter 2: an exercise in logical choices

In selecting the size for my forthcoming creation, I decided to match the scale of a rework that I had recently completed of the classic *Aurora* kit that featured the *Lost in Space cyclops chariot diorama*. The calculations were somewhat subjective in nature, due to the fact that Irwin Allen subject matter in general seemed to display little concern for continuity. As a result, reference points for scaling various hardware elements were often left to individual interpretation. In the case of the diorama, I simply noted that the original pilot script had specified a 40-foot height for the *cyclops*, and I designed my replacement *chariot* to match this revised 1/70th scale. For the *Jupiter 2* project, the question became one of what physical size would also best represent this newly established scale, considering the many discontinuities and varied



Ron's custom *Jupiter 2* model was built to be in scale with a previous scratch built effort: his replacement *Chariot* for the original *Aurora* diorama. Coincidentally, the *Playing Mantis* die cast *Space Pod* is also in the same scale.

Photo © Mike Dabney



Ron Gross with the *Polar Lights Jupiter 2* model kit.

versions of the ship that were evident throughout the series.

The diameter of the full scale *Jupiter 2* studio set measured just under 48 feet after all exterior revisions were eventually effected. In addition to the simplified straight-line profile in place of the graceful, composite curves displayed by the miniature, the angles were also such that the roof line was defined by a 'tighter' circle. Another *Fox* plan detailing a top view for miniature construction attempted to retain this scale, but, upon close inspection, was not entirely successful. If so accepted, the resultant hatchway height would simply not be adequate to accommodate an adult human figure. The problem arises from the need to reconcile full-sized studio sets, which have very specific dimensions, with a longer, lower and sleeker hull contour. Add to this disparity the fact that the interior sets were actually situated below the suggested seam line between the two primary hulls, which would never work if one expected the lower level viewport to make any sense.

For my revised interior plans, therefore, I saw the the need to raise the floor to the point of the seam line, and to widen the circle defined by the ends of the wall beams. If the interior layout were not widened, the distance between the viewport and the flight deck console would be unacceptably long, compromising the overall look in this critical area. This is also the reason why it would not be practical to arbitrarily resize the *Jupiter 2* in an effort to reconcile both decks and accommodate all supporting hardware. Such an attempt would necessitate adjusting the exterior profile in order to retain the cockpit integrity,



Above three shots: is it a model, or the actual studio set? Contest winner Graham Edwards effected surprisingly few modifications to achieve this brilliant build-up of the *Polar Lights Jupiter 2* interior. His remarkable results are a testament to the benefits of a quality paint job to any fine model effort. All photos by Graham Edwards.

which, of course, is the very characteristic that we worked so hard to recreate in the first place.

Having accepted all of the above, I was then left with individual wall sections which had different (essentially shorter) proportions compared with their full scale counterparts. The solution was to duplicate as much of the original detail as possible, but to spread out and/or 'stretch' specific areas as required in order to fill the space. The most logical reference for scale was that of an internal hatchway, which, by necessity, now had a smaller dimension. The net result of this entire remapping process was that the miniature measured out at 25% larger than that of its full scale counterpart, or about 60 scale feet. In order to satisfy the criteria for my required 1/70th scale, therefore, the diameter of my prototype would now be established at 10.25 inches, very closely returning to that of the original Merriman concept of the early eighties.

The physical construction of my prototype was a painstaking and time consuming process, and is fully chronicled elsewhere. I was gratified that the final result seemed to satisfy some of the most critical eyes in fandom, with accolades coming

in from Jeff King, David Merriman, Mark Dorais, Shane Johnson, and others. Although I had completed the plans for the full upper deck interior, I decided to temporarily fit my new creation with the mock 'radial graphic' insert which was evident inside the primary studio miniature. As it turned out, this enhancement would remain a permanent fixture, as an exciting new application would soon arise for all of my blueprint plans, including the as yet unused sheets for the interior layout.

Enter Polar lights: the opportunity of a lifetime

Perhaps the most important compliment that my work could receive came from Tom Lowe and Dave Metzner of *Polar Lights*, when they contacted me to solicit my involvement with his company's forthcoming *Jupiter 2* model kit. I soon found myself submitting my entire collection of drawings and blueprints to the innovative engineering staff associated with the company, where decisions had to be made as to how much of my design could actually be implemented in light of certain practical considerations.

The first issue dealt with the nature of rigid, production grade 'tools' or molds compared with the flexible RTV rubber molds

that I personally utilize, as do virtually all 'garage kit' manufacturers. The second had to do with a parts-count concern, in that an effort had to be made to keep the cost at a reasonable level to achieve a desired price point. An excellent example of a part involving both of these challenges is that of the bottom lighting ring. It is, quite simply, an ingenious engineering compromise which eliminates all 'undercuts' and is able to be represented as a single piece. If the part seems somewhat on the small side, please note that the top, angled ridge of the ring is actually incorporated into the bottom of the lower deck, allowing for a seamless union upon painting and full assembly.

Perhaps the most impressive aspect of this model kit, however, is the ease with which it can be completely dry-fitted together. While it took several years for me to see my scratch built prototype standing upright on its landing legs, this larger production model (12 inches in diameter, or 1/60th scale by my calculations) can actually achieve that status in a matter of a few minutes. The overall degree of 'builder-friendliness' engineered into the *Polar Lights* kit is, in fact, among the best I have seen. It offers the opportunity for nearly immediate gratification to the less

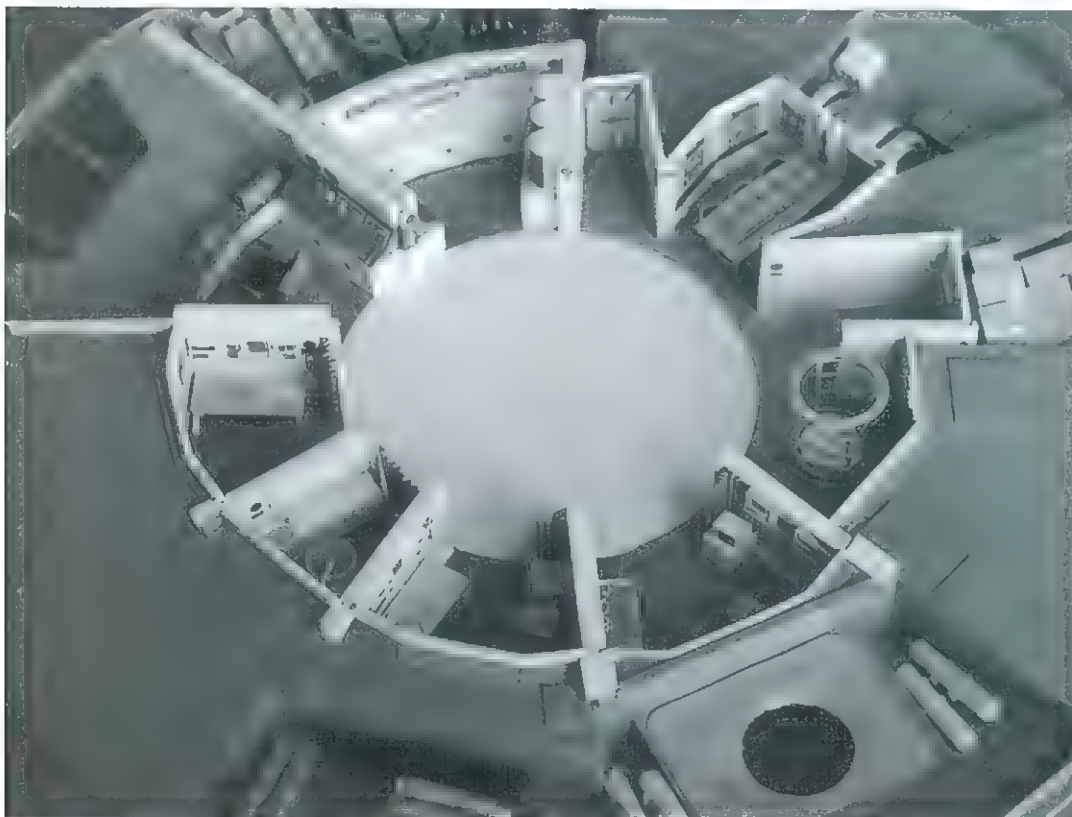
patient and skilled, while also providing a vast spectrum of customizing possibilities for those of us who just can't seem to leave well enough alone.

Suggested enhancements and general techniques

Virtually all plastic model kits on the market, no matter how well engineered, can still benefit from some degree of custom modification. Perhaps the most important adjustment that one can make to the *Polar Lights Jupiter 2* kit for the sake of improving the overall visual impact is also, fortunately, one of the easiest. The relationship of the top dome to the rest of the structure involves a delicate balance if the look of the primary studio miniature is to be captured convincingly. The dome supplied with the kit is somewhat tall and needs to be trimmed by about 1/8th-inch on a flat sandpaper surface to produce the desired effect. An unexpected but welcome byproduct of this simple procedure is that the dome will now actually fit more easily into its supplied socket.

The reason that the landing gear footpads are integrated with the ladder sections is due to both a weight support and a parts-count consideration. They can be readily separated with a small hobby saw, however, if one wishes to construct clevis pin arrangements for each leg assembly similar to those of the original miniature. In any event, the addition of the missing ribbed features on the footpad surfaces should be seriously considered, as these details tend to add a good deal of character to this area of the model. The most efficient way to proceed would be to make tiny slits into the plastic with a hobby saw blade at each point where a raised rib effect should be evident. Then, simply insert small pieces of thin gauge plastic sheet into these cut areas which can later be trimmed with a file, and secure the assemblies from the underside with a fast-curing glue.

The desire of *Polar Lights* to incorporate lower level detailing as part of the package necessitated some modifications from the interior plans which I originally submitted. I will admit to having been wary of this decision at the outset, as, once again, it is simply not possible to include both decks in proper proportion and



Jim James' masterful build-up of the the *Polar Lights* lower deck lends instant credibility to this departure from Ron's original interior interpretation. Photo © Jim James.



maintain the integrity of the hull contour. A clever solution was merely to represent the lower level in a smaller scale, which, according to my calculations, appears to be about 1/100th. After seeing some rather spectacular build-ups of this area, I have grown to respect this design decision as a valid alternative to the inclusion of fully-defined landing leg wells.

For those wishing to forgo the lower level detailing and properly establish the landing wells, it will be necessary to cut out the lower hull areas which are currently defined as shallow indentations. The required internal assemblies may then be fashioned from plastic sheet, utilizing part no. 32 from the kit, labeled 'lower level support wall' as a general template for the tapered side walls. Once fully constructed, the supplied landing struts will no longer be sufficiently extended to reach the newly established points of support. An excellent choice would now be to replace the original struts with new ones fashioned from thinner brass rod and tubing, thereby duplicating the procedure that I employed for my prototype.

Although the upper deck internal appointments supplied with the *Polar Lights* kit display a few minor positional differences compared with my plans, this is not a serious issue due to the inevitably subjective nature of the interior in general. The degree of overall detailing was

chosen very wisely to permit the generous use of custom or third-party decals, if so desired. For those wishing to detail the individual panels and other areas in a more traditional manner, however, I will share an efficient trick that I learned several years ago, courtesy of Dave Merriman.

The various knobs, controls, and lights on the faces of many of the control panels can be quickly defined by drilling appropriately sized holes, then inserting matching pieces of thin copper rod or solid wire. After proper trimming, the newly exposed tips can now accept tiny points of paint to produce a very clean and crisp effect. The degree of possible intricacy offered by this technique is almost limitless, provided that one has access to drill bits which are small enough to handle the job.

The flight deck console is an excellent candidate for the above procedure, but an entirely different approach can produce equally dramatic results. Consider purging the panel faces altogether and replacing them with custom decals which will accept back lighting. Most copying and printing services can photo-reduce suitable drawings or photographs to any size specified and print the final results on clear acetate. The cut-out pieces may then be mounted to support sections prepared from clear plastic sheet for final application to the console. This is the general technique that I utilized for detailing the cockpit of my prototype, which was the only interior area that I would fully articulate.

The three 'static discharge' units which are normally positioned within the freezing

Left: the underside of the *Polar Lights Jupiter 2* kit, as finished by Jim Pizar.

Below left: Jim has offered pictorial examples of Ron's construction tips for the kit on the *CultTVman* web site (see end of this article) as part of a joint venture. This example from that series displays the effectiveness of adding the 'ribbed' effects on the landing gear foot pads. Both photos © Jim Pizar.

tube array are not included with this model, but they can be reinstated quite easily. Simply cut the individual clear pieces to size from 1/8th-inch lucite or plexiglass rod and prepare the layered top and bottom supports from suitable plastic tube stock. And while we're on the subject of adding parts, let's also entertain the possibility of the reverse process with respect to those supplied 'park benches' which are integrated into the floor. Fortunately, excellent replacement 'acceleration couches' are available from a third party source, *Skyhook Models*.

The elevator assembly included with this model is the result of a typical limitation of an 'all plastic assembly kit', and I suspect that many modelers will choose to rebuild this part completely from scratch. A proven technique would involve the creation of the individual sections of the cage from 18 gauge wire, then securing them to thin, vertical support rods with cyanoacrylate (super glue). Care must be taken to insure the symmetry of the new parts with the aid of a cylindrical guide. Make several tight windings, then slip the template away and separate the multiple-rung coil into individual circular sections. Upon completion of the structure, one will have the opportunity to clip out the frontal area which should be open, thereby duplicating the appearance of the original elevator cage to a very high degree.

Pictorial examples and final thoughts

The above suggestions for enhancements to the *Polar Lights* kit were selected from a larger collection which have been posted on the 'CultTVman' web site. The supporting images are those of other modeler's fine workmanship who have graciously granted permission for their use in this article. Jim Pizar, in fact, specifically followed many of my suggestions as part of a joint venture series that web master Steve Iverson (CultTVman) sponsored last year. I am proud and honored to report that Jim's creation has been the recipient of several

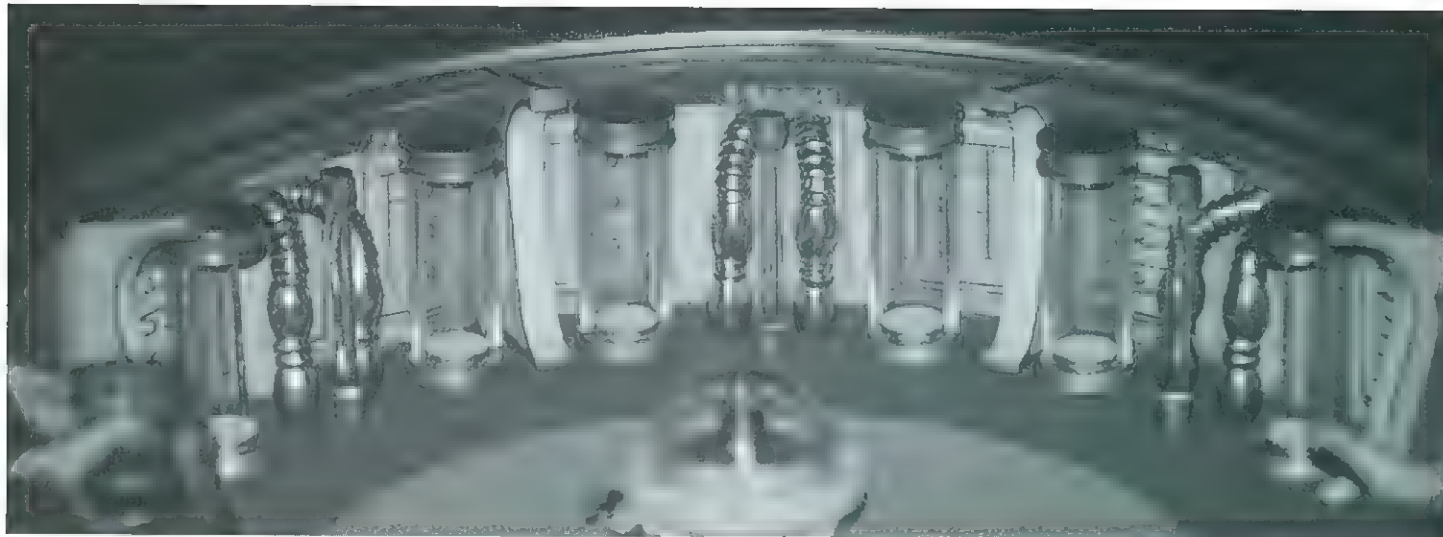
awards, including a bronze at the 1999 *Wonderfest* competition.

The spectacular work of Jim James speaks for itself, and the image of his lower level build-up serves to lend instant credibility to this departure from my original interior interpretation.

Graham Edwards won an internet-based contest last year for which I was honored to be one of the judges, and I was quite literally blown away by his work. Graham's select customizations included the reconstruction of the elevator cage (in a manner similar to that of my description) and the addition of the static discharge tubes. His work is an excellent example of the benefits that a superior paint job will yield to any modeling effort in creating the desired illusion. My first impression upon viewing photos of this masterpiece, in fact, was that these shots were of the actual life-sized studio set.

Finally, I wanted to include the fine work of Raymond Potter, in an effort to demonstrate how impressive this kit can look when it is built almost 'stock', or essentially faithful to the manufacturer's instructions. Mr. Potter's extremely clean rendition won a recent modeling contest sponsored by *Polar Lights* on their own web site.

The *Polar Lights Jupiter 2* kit has itself won several awards, including 'kit of the year' as denoted by a modeling magazine from Germany, a 'reader's choice' distinction from *Fine Scale Modeler*, and 'best mainstream Sci-Fi kit of 1998' as designated by the 'Starship Modeler' web site. Frequent *Starlog* contributor and long time Irwin Allen enthusiast Mike Clark informed me that the model was selected for use inside the new *astrogator* set which was built for the recent TV special *Lost in Space Forever*. It has also spawned a variety of quality after-market accessories, such as an efficient and affordable 'chase' lighting circuit from *D. F. Howard Enterprises* and a complete set of decals for internal detailing, prepared by Jim James.



Perhaps the most exciting element of this entire experience for me personally, however, was to have been given the opportunity to create a piece of artwork for the box cover in

the distinctive style of *Aurora Plastics*. Many of the paintings, illustrations and model backdrops that I have created over the years, in fact, have been inspired by original *Aurora* box art.

This illustration depicts a speculative landing of the *Jupiter 2* on yet another unknown planet, and is presented here in its original form.

Interestingly enough, I have not yet completed my own build-up of the *Polar Lights* production model, having been quite content with my scratch built prototype as a most prized possession. That day will surely come, however, and at that time I will have had the benefit of acquiring ideas from some of the best modelers around. The exchange of information with others who share the same passion is what really makes this hobby fun, and the same can be said for that of the research itself in this case, which spanned over ten years. There are surely more people who made important contributions, but I decided to limit my discussion to those with whom I had some direct contact.

It is indeed a rare occurrence when a personal dream begins to materialize before one's eyes. Overall, this is one of those amazing scenarios that seems to have followed an idealistic evolutionary path: from childhood fantasy, to concept, to production model, to only time will tell!

Relevant Web resources
www.CultTVman.com

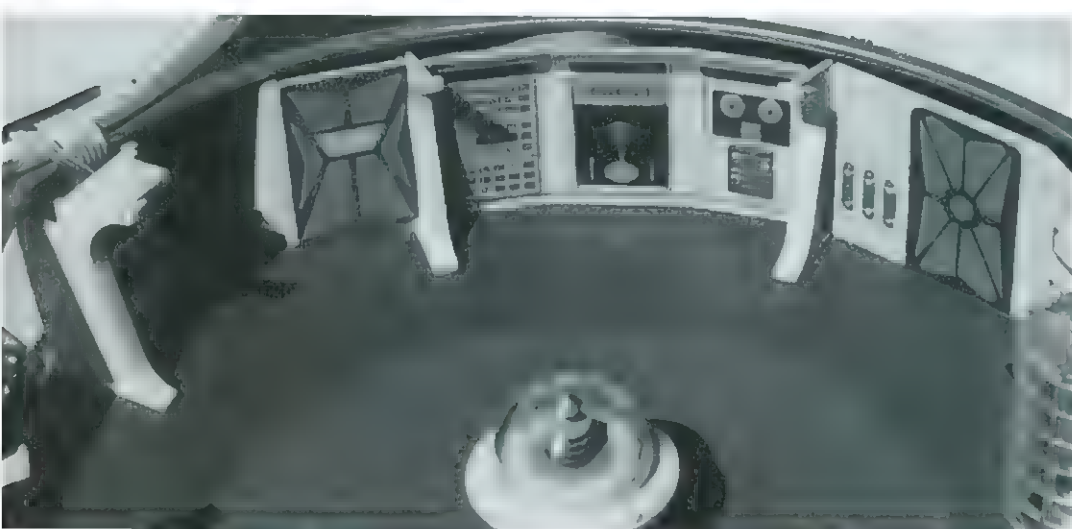
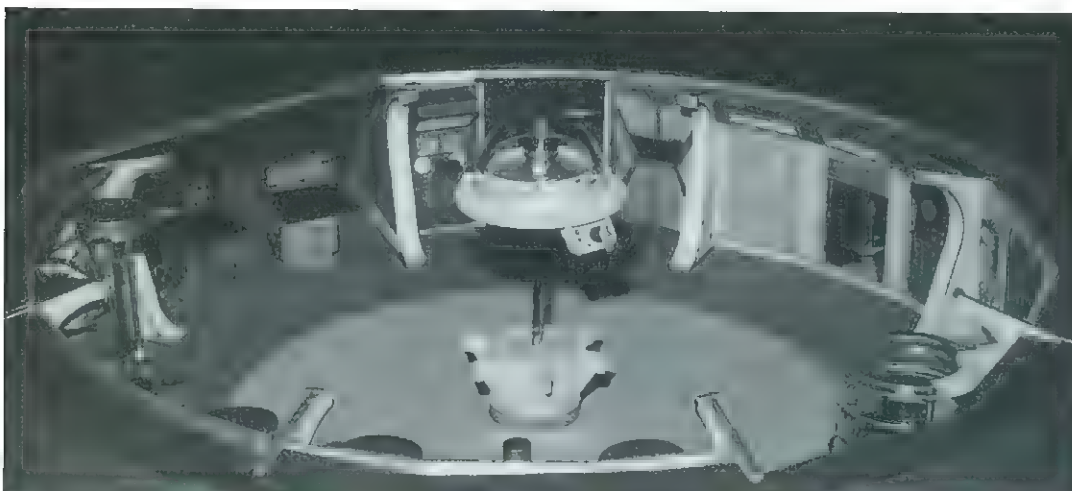
www.starshipmodeler.com

www.skyhookmodels.com

www.freeyellow.com/members4/dfhoward/main.htm

members.aol.com/Priplanus/index.html

A very special thanks to web master 'Dack' of the *Priplanus* site, who was the first to feature my work on his site (May, 1997), and continues to do so.



Top to bottom: Jim Pizar's award winning build-up includes generous customizing in the cryogenic freezing tube area. Photo © Jim Pizar.

Jim Pizar took the liberty of recreating the elevation feature of the central astrogator (as seen in the series pilot) with his masterful build-up. The top section is actually attached to a small telescoping antenna, and can be manually adjusted. Photo © Jim Pizar.

Raymond Potter's impressive rendition provides an excellent example of how good the *Polar Lights* kit can turn out when it is built essentially 'stock'. Photo © Raymond Potter.

Summoning up a life-sized Horned Reaper

christian soeder

Horned Reaper is the main character from the PC Game *Dungeon Keeper 2*, developed by Bullfrog, UK and published through Electronic Arts, USA...

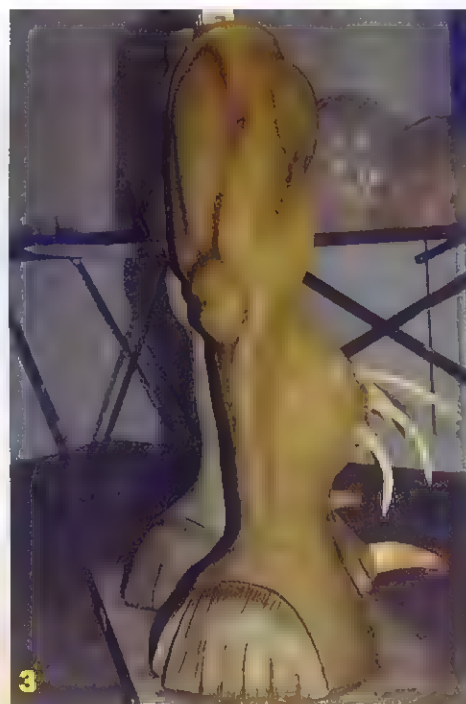
We were asked to sculpt a prototype of this figure as a commission piece for *Electronic Arts*, Germany. The sculpture would then be used as a master for series production. The strategy behind the commission was to enable exact copies of the

sculpture to be produced which could then be used as promotional items for the PC Game. The challenge lay in the size and massive proportions of the character at 1/1 scale—Horny, as his fans like to call him, has a total height of 87 inches.

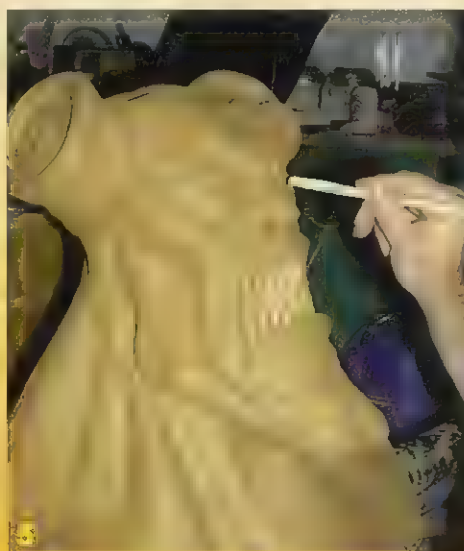
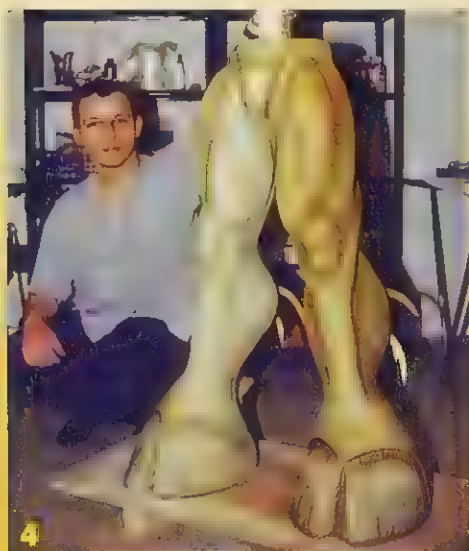
Before we could set about sculpting the figure painstaking planning of the whole project was necessary. We needed to define the dividing lines for the moulding process with an eye to the stresses that would occur in the final figure. We decided to separate the right leg at the thigh and we also planned a cut between the hips. Further, and to make the moulding and final production easier, we separated the arms. Before all this,

however, a 1/1 scale template was first created out of cardboard so that we could plan in the dividing lines.

For easy to handle connection of the various parts we employed a system that is also used to connect the various parts that make up store mannequins. It was always of the utmost importance to keep these connections as simple as possible since the series of figures subsequently



1: Armature, lower half, with template behind. 2: Clay sculpture, lower half, roughed in but without detail at this stage. 3: Final clay sculpture, detailed, with resin thorns attached. 4: Posing with final clay sculpture for comparison of size. 5: Close-up shot of the face showing first details. 6: Finished clay sculpture of upper body.



OXMOX

dark art
sculptures

220cm / 86.6 inches



©M. Klinnert



11

- 7: Upper body, ready for moulding.
- 8: Moulded lower body.
- 9: Clean up of the resin upper body half.
- 10: Cast upper body with the first armour part attached, test fitting.
- 11: Final detailing of the armour part for the feet.
- 12: Carving the horn out of foam.
- 13: Final test fitting of shoulder armour.





produced would be assembled by employees of PC Game shops or individual fans of the game, neither of whom would have much experience in this type of construction.

With our master plan at hand we began by building an extremely strong armature out of wood and aluminium parts which would be capable of handling the final weight of our sculpture. The armature was tightly wrapped with wire netting to create a proper surface for the sculpting material.

We then started to apply our sculpting clay and roughed out the form. This all sounds quite easy but, due to the massive size of the figure, we found ourselves using, in the final analysis, about three hundred pounds of clay in creating the piece. We decided to use our standard oil-based clay for the whole sculpt to enable the figure to be as highly detailed as possible. We worked on two main armatures—one for the lower and one for the upper half of the body. The arms were also sculpted separately.

After final detailing we produced RTV silicon moulds to capture every detail of the sculpture. Luckily we only needed to make two part moulds for our figure. These were created with an overall thickness of between one and two inches since we only needed to pour one cast out of them. To add stability to the moulds we added backmoulds made out of self expanding foam which saved a lot of weight.

With the moulds completed we could begin to pour the first cast. We used high quality resin poured in several layers to hollow cast the parts. Once out of the moulds the pieces required some sanding to enable a proper fit. This stage of the production could be compared to building one huge garage kit figure.

Once the parts of the figure had been cleaned up we inserted the connection pieces and anchored them in place with resin. Due to our painstaking planning in the pre-production stage we accomplished a perfect fit on every separation line on the figure.

With the main body completed it was time to sculpt the smaller details of the *Horned Reaper*. The horns and thorns were sanded and carved out of two-part expanding foam which gives a very convincing surface. Again we moulded them and produced resin casts. Why, you might ask, did we go to such extravagant lengths? Well, since we were producing the master for the final series production we needed to ensure that all the parts would be as stable as possible. Due to its size the only proper way of doing this with *Horned Reaper* was to cast each of the sculpted parts in resin.

The armour was almost a scratchbuild job. We used different parts for the underlay and sculpted the final form with a selfhardening two part clay. After a great deal of sanding we finally arrived at the desired look of metal. Again we found ourselves moulding and casting and inserting the connection parts. Every part of the armour is removable. We didn't want to go with sculpted-on armour parts as these would have lessened the illusion of reality.

Finally we used the airbrush to give the assembled figure the proper paint scheme.

Due to the upcoming release date of the PC Game we only had about two months in which to complete the whole project.

After the first promotional photos had been taken our prototype went into series production. The final figures will be poured in Polyester resin to ensure stability and keep weight down and will arrive fully painted as ready-to-assemble display sculptures.

So—be warned. The *Horned Reaper* is no longer trapped in your PC system—you could just meet this huge, mean creature in a store just around your corner.

Sculpture by Christian Soeder—dark art, and Marc Klinnert—Oxmox.

Contact info: Christian Soeder dark art, Kuehngasse 2, D 97337 Dettelbach, Germany. <http://www.darkart.de> e-mail: angel@darkart.de



Starship Troopers

(from page 29)—

Top left: *Fire Fly* by Tom MacDougall.

Top right: *Transport Bug* modelled and surfaced by Steve Toccaceli.

Centre: *Hopper* attack—CGI director Dave Morton,

Animation—Tim Pyle, TD—Dave Behar,

Hopper model Steve Toccaceli.

Bottom: *Ripple Bugs*.





Sci-Fi & Fantasy Models

41 (2000)

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